

**EASTERN ARIZONA COLLEGE**  
**Automotive Brake Systems**  
**Course Design**  
**2017-2018**

**Course Information**

**Division** Industrial Technology Education  
**Course Number** AUT 132  
**Title** Automotive Brake Systems  
**Credits** 2  
**Developed by** Brian Coppola  
**Lecture/Lab Ratio** 1 Lecture/3 Lab

**Transfer Status**

ASU	NAU	UA
OMT Department Elective	CTE Department Elective	Non Transferable

**Activity Course** No  
**CIP Code** 47.0604  
**Assessment Mode** Pre/Post Test (25 Questions/100 Points)  
**Semester Taught** Fall  
**GE Category** None  
**Separate Lab** No  
**Awareness Course** No  
**Intensive Writing Course** No

**Prerequisites**

None

**Educational Value**

This course is designed to reinforce and apply information, processes, and ideas gained in other courses. The major intent of this course is to enhance the individual's abilities to work with and diagnosis automotive brake systems.

**Description**

This course provides the theory, diagnosis and the repair of automotive brake systems. This is an in-depth study of disc and drum brake systems. The course covers anti-lock brakes, hydraulic operation, and brake system service, diagnosis and repair. Prepares students for ASE certification test on brakes.

**Supplies**

None

## **Competencies and Performance Standards**

### **1. Apply proper safety procedures and processes.**

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. Acquaint self with shop environment and hazards.
- b. Acquaint self with emergency procedures and policy.
- c. Accept responsibility for personal well-being and practice and follow safety guidelines.
- d. Acquaint self with material safety data sheets and chemicals used in shop.

#### **Performance Standards**

*You will demonstrate your competence:*

- o by completing safety assignments and written exam at a satisfactory level

*Your performance will be successful when:*

- o learner observes and practices safety procedures

### **2. Diagnose hydraulic brake systems concerns using a strategy-based approach.**

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. Determine root cause of hydraulic system brake failure.
- b. Inspect hydraulic to prevent hydraulic brake failure.

#### **Performance Standards**

*You will demonstrate your competence:*

- o by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- o by performing the priority NATEF tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- o learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- o learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- o learner actively participates in the NATEF task requirements listed in the related learning plan
- o learner attends required class and lab sessions and shows up on time

### **3. Perform hydraulic brake system component replacement and/or repairs needed to bring hydraulic system back to proper operating order.**

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. Perform repair on master cylinder, lines, switches valving, calipers, and wheel cylinders.
- b. Perform preventative brake flush procedure to maintain hydraulic system in good working order.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **4. Diagnose drum brake operational concerns.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Determine root cause of drum brake system operational failure.
- b. Inspect drum brake system to prevent drum brake failure.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **5. Perform drum brake system component repairs and/or replacement to bring brake system back to proper operating order.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Perform drum brake inspection, clean, make adjustments, turn drums, and fluid bleeding to bring drum brake system back to proper operation.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **6. Diagnose disc brake operational concerns.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Determine root cause of disc brake systems operational concern.
- b. Inspect disc brake system to prevent disc brake failure.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

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- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **7. Perform disc brake system component repair and/or replacement to bring brake system back to proper operating order.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Perform disc brake inspection, clean, make component replacement/repair, turn rotors, make adjustments, and perform fluid bleeding to bring disc brake system back to proper operation.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **8. Diagnose brake system's power assist system for operational concerns.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Determine brake power assist systems operation failure.

### **Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

## **9. Perform brake power assist component repair and/or replacement to bring brake assist system back to proper operating order.**

### **Learning objectives**

*What you will learn as you master the competency:*

- a. Perform testing and inspection process to isolate power assist failure.
- b. Replace powers assist failed component.

**Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
- learner actively participates in the NATEF task requirements listed in the related learning plan
- learner attends required class and lab sessions and shows up on time

**10. Diagnose and isolate cause of anti-lock systems concern.****Learning objectives**

What you will learn as you master the competency:

- a. Determine root cause of anti-lock brake system concern.
- b. Perform trouble-shooting sequence recommended by professional service reference material.

**Performance Standards**

*You will demonstrate your competence:*

- by completing NATEF aligned assignment and job sheets listed in the related learning plan (The assignment and job sheets must be completed at a satisfactory level to the instructor.)
- by performing the priority NATEF tasks listed in the related learning plan (The tasks must be completed with limited supervision - entry level.)

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on NATEF task requirements listed in related learning plan
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the NATEF task requirements listed in related learning plan
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- learner attends required class and lab sessions and shows up on time

### ***Types of Instruction***

Classroom Presentation

Lab

Individualized/Independent Study

Simulated or Actual Work Experience

### ***Grading Information***

#### ***Grading Rationale***

Each instructor has the flexibility to develop evaluative procedures within the following parameters.

1. The Post Test will represent 10% of the course grade.
2. Course learning activities shall represent 90% of the course grade.

#### Grading Weights

Lab=45%

Class (Includes Test and Assignments and Final)=45%

#### Grading Methods

Class score calculation-

Quizzes, assignments and job sheet points shall be added and carry a weight equal to one test score.

All exams except the final shall have equal weight (test scores averaged) and used in class score calculations.

The final (post-test) will be worth at least 10% of the overall final grade calculation.

Lab score calculation-

Instructor should evaluate each student's work habits using lab time card. Each student should be evaluated on productivity and progress on task requirements, working in a professional manner, clean-up and safe work habits. Instructor is also required to evaluate each student's skill level in achieving the NATEF task requirement outlined in the various learning plans.

Instructors are encouraged to reward students for showing up on time and attending each class and lab session. This can be done by requiring students to make arrangements with the instructor to make-up any lost time prior to missed day. All students need to notify the instructor of sick days through voice mail, etc. on the day of sickness. Instructors should not allow for any work to be turned in late or any test made up without some type of deduction for late assignments/test. Suggested deduction 50% of original score.

#### ***Grading Scale***

A 90%-100%

B 80%-89%

C 70%-79%

D 60%-69%

F Below 60%

P A non-major student may choose to have a grade of P or F rather than a letter grade. A grade of P will require that the student receive a percentage grade of a least 68%. A grade less than this will result in a grade of F.

## **Learning Plan**

### **Safety**

#### **Overview**

In this learning plan you will develop the knowledge needed to work safely in a shop environment. You will learn safety procedures, the location of safety equipment, and the safety features of various shop equipment. The instruction will cover general shop safety processes, fire safety, battery safety, lifting procedures, and health-related hazards.

#### **1. Apply proper safety procedures and processes.**

#### **Learning Activities**

- \_\_\_\_1. Complete a worksheet/assignment sheet.
  
- \_\_\_\_2. Collect a current article that relates to concepts and issues about which you are studying.
  
- \_\_\_\_3. Listen and observe a lecture covering safety procedures and practices - review a safety and hazards video.
  
- \_\_\_\_4. Operate hoist, floor jack (jack stands) and any equipment needed during assigned lab activities.
  
- \_\_\_\_5. Identify location of safety equipment, first-aid kit, phone, fire blanket, fire extinguishers, exits, light switches and vents.

#### **Assessment Activities**

- \_\_\_\_1. Participate in safety discussion.
- \_\_\_\_2. Complete activities in lesson.
- \_\_\_\_3. Complete written safety test.



## **Learning Plan**

### **Hydraulic Brake Systems**

#### **Overview**

To accurately diagnose hydraulic brake systems.

#### **2. Diagnose hydraulic brake systems concerns using a strategy-based approach.**

#### **Learning Activities**

- \_\_\_\_ 1. Measure and adjust pedal height. (P-2 NATEF V A 1)
- \_\_\_\_ 2. Check master cylinder for internal and external leaks and proper operation. (P-2 NATEF V A 2)
- \_\_\_\_ 3. Determine cause for poor stopping, pulling or dragging concerns caused by problems in the hydraulic system. (P-1 NATEF V A 4)
- \_\_\_\_ 4. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; determine necessary action. (P-2 NATEF V A 5)

#### **Assessment Activities**

- \_\_\_\_ 1. Participate in discussion of subject matter. Listen, take notes, read material, and discuss items presented related to brake hydraulic components / systems and watch A/V presentation.
- \_\_\_\_ 2. Complete Ford CBI instructional module, assignment and job sheets related to lesson tasks. AS1-L1-UII & AS1-L2-UIII
- \_\_\_\_ 3. Complete required after lecture quiz.

## Learning Plan

### Hydraulic Brake System Replacement/Repairs

#### Overview

To perform hydraulic brake system component replacement or repairs.

#### 3. Perform hydraulic brake system component replacement and/or repairs needed to bring hydraulic system back to proper operating order.

#### Learning Activities

- \_\_\_\_1. Remove, bench bleed, and reinstall master cylinder. (P-1 NATEF V A 3)
- \_\_\_\_2. Fabricate and install brake lines (double flare and ISO types); replace hoses, fittings, and supports as needed. (P-2 NATEF V A 6)
- \_\_\_\_3. Select, handle, store, and install brake fluids to proper level. (P-1 NATEF V A 7)
- \_\_\_\_4. Inspect, test, and replace metering (hold-off), proportioning (balance), pressure differential, and combination valves. (P-3 NATEF V A 8)
- \_\_\_\_5. Inspect, test, replace, and adjust height (load) sensing proportioning valve. (P-3 NATEF V A 9)
- \_\_\_\_6. Inspect, test, and replace components of brake warning light system. (P-3 NATEF V A 10)
- \_\_\_\_7. Bleed (manual, pressure, vacuum or surge) brake system. (P-1 NATEF V A 11)
- \_\_\_\_8. Flush hydraulic system. (P-3 NATEF V A 12)
- \_\_\_\_9. Check parking brake cables and components for wear, rusting, binding, and corrosion; clean, lubricate, and replace as needed. (P-2 NATEF V E 3)
- \_\_\_\_10. Check parking brake operation; adjust as needed. (P-1 NATEF V E 4)
- \_\_\_\_11. Check operation of parking brake indicator light system. (P-3 NATEF V E 5)

#### Assessment Activities

- \_\_\_\_1. Participate in discussion of subject matter. Listen, watch Babco A/V presentation, take notes and discuss related material dealing with hydraulic service & repair.
- \_\_\_\_2. Complete assignment job sheets related to lesson tasks. AS1-L2-UIV, AS2-L2-UIV, AS3-L2-UIV, AS4-L2-UIV, AS1-L3-UV, AS2-L3-UV, JS1-L1-UIII, JS1-L2-UIII, JS1-L2-UIV, Js2-L2-UIV, JS3-L2-UIV, JS4-L2-UIV, JS5-L2-UIV, JS6-L2-UIV, JS1-L1-UV, JS2-L1-UV, JS1-L2-UV, JS1-L2-UV, JS1-L3-UV
- \_\_\_\_3. Complete all required tests related to servicing hydraulic brake system.

## **Learning Plan**

### **Drum Brakes**

#### **Overview**

To diagnose drum brake operational concerns.

#### **4. Diagnose drum brake operational concerns.**

#### **Learning Activities**

- \_\_\_\_1. Determine cause for poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns. (P-1 NATEF V B 1)
  
- \_\_\_\_2. Remove, clean (using proper safety procedures), inspect, and measure brake drums. (P-1 NATEF V B 2)

#### **Assessment Activities**

- \_\_\_\_1. Participate in discussion of subject matter. Listen, take notes, complete Ford CBI activity and discuss material related to diagnosis of drum brake system.
- \_\_\_\_2. Complete assignment and job sheets related to lesson tasks. AS1-L2-UIV, AS2-L2-UIV, AS3-L2-UIV, AS4-L2-UIV, AS1-L2-UVII
- \_\_\_\_3. Complete drum brake system test.

## Learning Plan

### Drum Brake Repair and/or Replacement

#### Overview

To perform drum brake system component repairs and/or replacement.

5. **Perform drum brake system component repairs and/or replacement to bring brake system back to proper operating order.**

#### Learning Activities

1. Mount brake drum on lathe; machine braking surface. (P-2 NATEF V B 3)
2. Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. (P-2 NATEF V B 4)
3. Remove, inspect, and install wheel cylinders. (P-2 NATEF V B 5)
4. Pre-adjust brake shoes and parking brake before installing brake drums or drum/hub assemblies and wheel bearings. (P-1 NATEF V B 6)
5. Install wheel, torque lug nuts, and make final checks and adjustments. (P-1 NATEF V B 7)

#### Assessment Activities

1. Participate in discussion of subject matter. Listen take notes, watch A/V presentation related to drum brake repair, watch demonstration on turning a drum, and discuss material related to drum brake service.
2. Complete job sheets related to lesson tasks. JS3-L2-UIV & JS2-L2-UIV, JS1-L2-UVII, JS2-L2-UVII, JS3-L2-UVII, JS4-L2-UVII
3. Complete test related to drum brake repair test.

## Learning Plan

### Disc Brakes

#### Overview

To diagnose disc brake operational concerns.

#### 6. Diagnose disc brake operational concerns.

#### Learning Activities

- \_\_\_\_1. Determine cause for poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns. (P-1 NATEF V C 1)
  
- \_\_\_\_2. Remove caliper assembly from mounting; clean and inspect for leaks and damage to caliper housing and determine necessary action. (P-1 NATEF V C 2)
  
- \_\_\_\_3. Clean and inspect caliper mounting and slides for wear and damage. (P-1 NATEF V C 3)
  
- \_\_\_\_4. Inspect wheel bearing noises, wheel shimmy, and vibration concerns and determine necessary action. (P-1 NATEF V E 1)
  
- \_\_\_\_5. Check operation of brake stop light system; adjust and service as needed. (P-1 NATEF V E 6)

#### Assessment Activities

- \_\_\_\_1. Participate in discussion of subject matter. Listen, take notes, watch A/V presentation covering disc brake operational theory, Ford CBI module, and discuss lesson material.
- \_\_\_\_2. Complete assignment sheets related to lesson tasks. AS1-L2-UVI
- \_\_\_\_3. Complete required after lecture quiz.

## Learning Plan

### Disc Brake Repair and/or Replacement

#### Overview

To perform disc brake system component repair and/or replacement.

#### 7. Perform disc brake system component repair and/or replacement to bring brake system back to proper operating order.

#### Learning Activities

- \_\_\_\_ 1. Remove, clean, and inspect pads and retaining hardware; determine necessary action. (P-1 NATEF V C 4)
- \_\_\_\_ 2. Disassemble and clean caliper assembly; inspect parts for wear, rust, scoring, and damage; replace seal, boot, and damaged or worn parts. (P-1 NATEF V C 5)
- \_\_\_\_ 3. Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks. (P-1 NATEF V C 6)
- \_\_\_\_ 4. Clean, inspect, and measure rotor with a dial indicator and a micrometer; follow manufacturer's recommendations in determining need to machine or replace. (P-1 NATEF V C 7)
- \_\_\_\_ 5. Refinish rotor according to manufacturer's recommendations. (P-1 NATEF V C 8)
- \_\_\_\_ 6. Adjust calipers with integrated parking brake system. (P-3 NATEF V C 9)
- \_\_\_\_ 7. Install wheel, torque lug nuts, and make final checks and adjustments. (P-1 NATEF V C 10)
- \_\_\_\_ 8. Remove and replace rotor. (P-2 NATEF V C 11)
- \_\_\_\_ 9. Remove, clean, inspect, repack, and install wheel bearings and replace seals; install hub and adjust wheel bearings. (P-1 NATEF V E 2)
- \_\_\_\_ 10. Replace wheel bearing and race. (P-1 NATEF V E 7)

#### Assessment Activities

- \_\_\_\_ 1. Participate in discussion of subject matter. Listen, take notes, watch A/V video covering disc brake repair, Ford CBI activity, and discuss disc brake system repair.
- \_\_\_\_ 2. Complete job sheets related to lesson tasks. JS1--L2-UVI, JS2-L2-UVI, JS3-L2-UVI, JS4-L2-UVI
- \_\_\_\_ 3. Complete test covering disc brake system.

## **Learning Plan**

### **Brake System's Power Assist System**

#### **Overview**

To diagnose brake system's power assist system for operational concerns.

#### **8. Diagnose brake system's power assist system for operational concerns.**

#### **Learning Activities**

- \_\_\_\_1. Test pedal free travel with and without engine running; check power assist operation. (P-2 NATEF V D 1)
  
- \_\_\_\_2. Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster. (P-2 NATEF V D 2)

#### **Assessment Activities**

- \_\_\_\_1. Participate in discussion of subject matter. Listen, take notes, read assigned material, and discuss power brake operational theory.
- \_\_\_\_2. Complete assignment sheets related to lesson tasks. AS1-L1-UVIII & AS2-L1-UVIII

## **Learning Plan**

### **Brake Power Assist Component Repair and/or Replacement**

#### **Overview**

To perform brake power assist component repair and/or replacement.

- 9. Perform brake power assist component repair and/or replacement to bring brake assist system back to proper operating order.**

#### **Learning Activities**

- \_\_\_\_1. Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation. (P-2 NATEF V D 3)
  
- \_\_\_\_2. Inspect and test hydro-boost system and accumulator for leaks and proper operation. (P-3 NATEF V D 4)

#### **Assessment Activities**

- \_\_\_\_1. Participate in discussion of subject matter. Listen, take notes, read, and watch demonstration related to power assist unit replacement and repair.
- \_\_\_\_2. Complete job sheets related to lesson tasks. JS1--L1-UVIII & JS2-L1-UVIII



## Learning Plan

### Anti-Lock Systems

#### Overview

To diagnose and isolate cause of anti-lock systems concern.

#### 10. Diagnose and isolate cause of anti-lock systems concern.

#### Learning Activities

- \_\_\_\_1. Inspect and test anti-lock brake system (ABS) components; determine necessary action. (P-2 NATEF V F 1)
- \_\_\_\_2. Determine cause for poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise concerns caused by the anti-lock brake system (ABS). (P-2 NATEF V F 2)
- \_\_\_\_3. Determine cause for anti-lock brake system (ABS) electronic control(s) and components using self-diagnosis and/or recommended test equipment. (P-1 NATEF V F 3)
- \_\_\_\_4. Depressurize high-pressure components of the anti-lock brake system (ABS). (P-2 NATEF V F 4)
- \_\_\_\_5. Bleed the anti-lock brake system's (ABS) front and rear hydraulic circuits. (P-2 NATEF V F 5)
- \_\_\_\_6. Remove and install anti-lock brake system (ABS) electrical/electronic and hydraulic components. (P-3 NATEF V F 6)
- \_\_\_\_7. Service, test, and adjust anti-lock brake system (ABS) speed sensors. (P-2 NATEF V F 7)
- \_\_\_\_8. Check to determine if anti-lock brake system (ABS) braking concern is caused by vehicle modifications (tire size, curb height, final drive ratio, etc.) (P-3 NATEF V F 8)

#### Assessment Activities

- \_\_\_\_1. Participate in discussion of subject matter. View NAPA anti-lock A/V material, listen, take notes, and watch demonstration related to servicing anti-lock brake systems.
- \_\_\_\_2. Complete assignment and job sheets related to lesson tasks. AS1-L3-UVIII and job sheet related to repair anti-lock brake system hard fault / code concern.
- \_\_\_\_3. Complete test related to power assist & anti-lock brakes.