

**BULLETIN 2003 – 20****Date: July 14, 2003**

U.S. Department of Labor Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services (OATELS) Washington, D.C. 20210	<u>Distribution:</u>  A-541 Headquarters A-544 All Field Tech A-547 SD+RD SAC+; Lab. Com	<u>Subject</u> Additional RAIS Code and Occupational Title for Automotive Technician Specialist (Undercar Specialist) Occupation  <u>Code:</u> 200
Symbols: DSNIP/JLP		<u>Action:</u> Immediate

**PURPOSE:** To advise Office of Apprenticeship Training, Employer and Labor Services (OATELS), Bureau of Apprenticeship and Training (BAT) Staff of an addition to the Registered Apprenticeship Information System (RAIS) for the coding and recording of a new occupational title for an existing occupation.

Automotive Technician Specialist  
Existing Title: Undercar Specialist  
NET Code: 49-3023.02  
RAIS Code: 1034CB  
Training Term: 2,000 to 4,000 hours  
Type of Training: Competency - based)

The letter "A" has been added as an extension of the RAIS Code 1034 to identify applications utilizing the new occupational title. All other codes (DOT, SIC and O\*Net) will remain the same.

**BACKGROUND:** The National Office of ATELS received several inquiries from the American Automobile Dealers Association (ADA) representing twelve automotive manufacturing corporations recommending utilization of the new occupational title. Additionally, the Automotive Youth Educational Systems (AYES) Board of Directors supports the creation of the new occupational title. The new title has been certified by ASE in four industry competencies (Brakes, Steering and Suspension, Electrical and Electronic Systems, and Engine Performance).

As the two occupations are similar except for application within the ADA, it was determined that awarding a separate RAIS Code would allow for distinction and application by industry.

**ACTION:** Effective immediately, all OATELS/BAT staff should implement data entry for the "Automotive Technician Specialist" classification into RAIS under Code 1034A. New Program Standards and revisions to existing program standards may include incorporation of either occupational title and should utilize the appropriate RAIS Code.

This RAIS Code change will be reflected in the next Bulletin announcement of the List of Apprenticiable Occupations. Questions relating to this Bulletin should be forwarded to the Chief, Division of Standards and National Industry Promotion, at (202) 693-3813.

**NOTE:** This Bulletin is being sent via Electronic Mail (e-mail).

**Automotive Technician Specialist**

RAIS Code: 1034CB 49-3023.02

1. Term: Competency Based, 2000 hours minimum to 4000 hours maximum
2. Occupational Description:

Automotive technician specialists repair and overhaul cars, buses, trucks and other automotive vehicles. They determine the nature and extent of any damage or malfunction and plan the repair work. Automotive technician specialists may disassemble the vehicle to inspect and repair parts. They work on engines, engine performance, transmissions and automotive systems such as brakes, suspensions, steering, electrical and electronic systems, and fuel.

3. Competencies list:

**Safety**  
**Suspension and Steering**  
**Brakes**  
**Electrical/Electronic Systems**  
**Engine Performance**

4. On-The –Job Training Outline:

**Schedule of Work Experience**

The program is Competency Based with a minimum of 2000 hours and a maximum of 4000 hours work experience. However, the apprentice is required to meet the competency standards as established by the AYES Passport.

Apprentices will receive training in the ASE industry standardized competencies listed below. The order in which this training is given will be determined by the flow of work on the job and will not necessarily be in the following listed order. The times allotted to these various processes are the estimated times which the average apprentice requires to learn each phase of the trade. They are intended only as a guide to indicate the quality of the training being provided and the ability of the apprentice to absorb this training in an average amount of time.

The total term of the apprenticeship is indicated below. Each apprentice receives an AYES Passport at the beginning of their apprenticeship. Listed on this passport are the competencies which they must meet. Once an apprentice has mastered a competency, their Mentor will stamp their AYES Passport in the corresponding box, indicating their completion of that particular section.

**Approximate Hours**

**Safety  
hours**

**100 - 200**

1. Identify shop hazards and explain the necessary steps to avoid personal injury or property damage.

2. Demonstrate the correct use of safety equipment such as safety glasses, fire extinguishers and how to properly lift a heavy object.
3. Identify and define hazardous materials.
4. Apply federal, state and local regulations when storing and disposing of chemical materials and waste.

**Suspension and steering**

**450 - 900**

**hours**

1. Steering Systems Diagnosis and Repair
2. Suspension Systems Diagnosis and Repair
3. Wheel Alignment Diagnosis Adjustment and Repair
4. Wheel and Tire Diagnosis and Repair

**Brakes**

**750 - 1500 hours**

1. Hydraulic System Diagnosis and Repair
2. Drum Brake Diagnosis and Repair
3. Disk brake Diagnosis and Repair
4. Power assist units diagnosis and repair
5. Miscellaneous (Wheel bearings, parking brakes, electrical, etc) Diagnosis and repair
6. Anti Lock brake system

**Electrical/Electronic Systems**

**400 - 800 hours**

1. General/Electrical System Diagnosis
2. Battery Diagnosis and Service
3. Starting system diagnosis and repair
4. Charging system diagnosis and repair
5. Lighting systems diagnosis and repair
6. Gauges, warning devices and driver information systems diagnosis and repair
7. Horn and wiper/washer diagnosis and repair
8. Accessories diagnosis and repair

**Engine Performance**

**300 - 600 hours**

1. General Engine Diagnosis
2. Computerized Engine Controls Diagnosis and Repair
3. Ignition System Diagnosis and Repair
4. Fuel, Air induction and Exhaust systems diagnosis and repair
5. Emissions Control Systems Diagnosis and Repair
6. Engine related Services

**TOTAL** .....**2,000/4,000 hours**

**Automotive Technician Specialist  
1034A**

**Additional Training**

**A. Shop Safety, First Aid and Hazardous Waste Disposal**

- a) Identify shop hazards and explain the necessary steps to avoid personal injury or property damage
- b) Define the steps required to avoid fire in the shop.
- c) Demonstrate the proper selection and operation of a fire extinguisher.
- d) Identify the necessary steps for personal safety in the shop.
- e) Identify personal protective equipment such as safety glasses and explain their use in an automotive shop and the importance of that use.
- f) Demonstrate how to protect your hands from the hazards found in an automotive shop.
- g) Describe how to properly lift a heavy object and demonstrate the process.
- h) Define the special training and necessary First Aid Steps required to deal with Blood Borne Pathogens.
- i) Demonstrate the safe use and proper maintenance of pneumatic and hydraulic tools including vehicle lifts.
- j) Identify, describe, and record all unsafe or potentially unsafe conditions or acts, environmental noncompliance, malfunctions, and health or industrial hygiene problems.
- k) Identify and define hazardous materials by chemical and physical properties, such as: color, corrosivity, density, flammability, reactivity, specific gravity, and toxicity.
- l) Apply federal, state, and local regulations when storing and disposing of chemical materials and waste and know where to find current information about implementing these regulations.

**B. SUSPENSION AND STEERING**

- a) Disable and enable supplemental restraint system (SRS).
- b) Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring).
- c) Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action.
- d) Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action.
- e) Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action.
- f) Adjust manual or power non-rack and pinion worm bearing preload and sector lash.
- g) Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.
- h) Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots
- i) Inspect power steering fluid levels and condition.

**C. BRAKES**

- a) Identify and interpret brake system concern; determine necessary action.
- b) Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.
- c) Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law).
- d) Measure brake pedal height; determine necessary action.
- e) Check master cylinder for internal and external leaks and proper operation; determine necessary action.
- f) Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action.
- g) Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; determine necessary action.
- h) Select, handle, store, and fill brake fluids to proper level
- i) Inspect, test, and/or replace components of brake warning light system.
- j) Bleed (manual, pressure, vacuum or surge) brake system
- k) Flush hydraulic system.
- l) Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.
- m) Remove, clean (using proper safety procedures), inspect, and measure brake drums; determine necessary action.
- n) Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.
- o) Remove, inspect, and install wheel cylinders
- p) Remove caliper assembly from mountings; clean and inspect for leaks and damage to caliper housing; determine necessary action.
- q) Remove, clean, and inspect pads and retaining hardware; determine necessary action.
- r) Clean, inspect, and measure rotor with a dial indicator and a micrometer; follow manufacturer's recommendations in determining need to machine or replace.
- s) Remove and reinstall rotor
- t) Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation; determine necessary action.

**E. ELECTRICAL/ELECTRONIC SYSTEMS**

- a) Identify and interpret electrical/electronic system concern; determine necessary action.
- b) Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins.
- c) Diagnose electrical/electronic integrity for series, parallel and series-parallel circuits using principles of electricity (Ohm's Law).
- d) Use wiring diagrams during diagnosis of electrical circuit problems
- e) Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems.
- f) Check electrical circuits with a test light; determine necessary action.

- g) Measure source voltage and perform voltage drop tests in electrical/electronic circuits using a voltmeter; determine necessary action.
- h) Check continuity and measure resistance in electrical/electronic circuits and components using an ohmmeter; determine necessary action.
- i) Maintain or restore electronic memory functions
- j) Diagnose charging system for the cause of undercharge, no-charge, and overcharge conditions.
- k) Diagnose supplemental restraint system (SRS) concerns; determine necessary action. (Note: Follow manufacturer's safety procedures to prevent accidental
- l) Check for module communication errors using a scan tool.

## **E. ENGINE PERFORMANCE**

- a) Identify and interpret engine performance concern; determine necessary action
- b) Research applicable vehicle and service information, such as engine management system operation, vehicle service history, service precautions, and technical service bulletins.
- c) Diagnose abnormal engine noise or vibration concerns; determine necessary action.
- d) Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action.
- e) Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns with an oscilloscope and/or engine diagnostic equipment; determine necessary action.
- f) Prepare 4 or 5 gas analyzer; inspect and prepare vehicle for test, and obtain exhaust readings; interpret readings, and determine necessary action.
- g) Retrieve and record stored OBD I diagnostic trouble codes; clear codes.
- h) Retrieve and record stored OBD II diagnostic trouble codes; clear codes.
- i) Diagnose emissions or drivability concerns resulting from malfunctions in the computerized engine control system with no stored diagnostic trouble codes; determine necessary action.
- j) Check for module communication errors using a scan tool
- k) Inspect and test computerized engine control system sensors, power train control module (PCM), actuators, and circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO); perform necessary action.
- l) Diagnose ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns on vehicles with electronic ignition (distributor less) systems; determine necessary action.
- m) Diagnose ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns on vehicles with distributor ignition (DI) systems; determine necessary action.
- n) Inspect and test ignition coil(s); perform necessary action
- o) Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, and stalling, poor mileage, dieseling, and emissions problems on vehicles with carburetor-type fuel systems; determine necessary action.
- p) Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.