Name _____ Date _____ Class _____

DIAGNOSING AN AIR INJECTION SYSTEM

NATEF Standard(s) for Engine Performance:
E3-3 Inspect and test electrical/electronically operated components and circuits of air injection systems; perform necessary action.

DIRECTIONS: Fill in the blanks below by identifying (1) Safety First Practices that must be followed, (2) Tools and Equipment required, (3) three possible causes of air injection system problems, and (4) corrective actions that should be taken.

- _____
- _____
- _____
- _____

Tools and Equipment Required:

- _____
- _____
- _____
- _____
- _____
- _____

QUICK ✔ Diagnostic for Cause(s)

List at least three common causes of air injection system problems:

1. _____
2. _____
3. _____
4. _____
5. _____

QUICK ✔ Diagnostic for Corrective Action(s)

List possible corrective action(s):

1. _____
2. _____
3. _____
4. _____
5. _____

COMPLETING A VEHICLE REPAIR ORDER FOR AN ENGINE PERFORMANCE CONCERN

NATEF Standard(s) for Engine Performance:
A1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.

SAMPLE VEHICLE REPAIR ORDER Vehicle Repair Order # _____

Date ____/____/____

Customer Name & Phone #: _____ Vehicle Make/Type: _____ VIN: _____ Mileage: _____

Service History: _____

Customer Concern: _____

Cause of Concern: _____

Suggested Repairs/Maintenance: _____

Services Performed: _____

Parts		
Item	Description	Price
1		
2		
3		
4		
5		
6		

Labor	Time In:
Diagnosis Time:	Time Complete:
Repair Time:	Total Hours:

I hereby authorize the above repair work to be done using the necessary material, and hereby grant you and/or your employees permission to operate the vehicle herein described on streets, highways, or elsewhere for the purpose of testing and/or inspection. An express mechanic's lien is hereby acknowledged on above vehicle to secure the amount of repairs thereof.

x _____

PROCEDURES **Refer to the vehicle service information for specifications and special procedures. Then prepare a vehicle repair order for the vehicle provided by your instructor.**

_____ 1. **Write legibly.** Others will be reading what you have written.

_____ 2. **Make sure all information is accurate.** Inaccurate information will slow the repair process.

_____ 3. **Complete every part of the Vehicle Repair Order.** Every part must be completed.

_____ 4. **Number the Vehicle Repair Order.** This will help others track the repair.

_____ 5. **Date the Vehicle Repair Order.** This will help document the service history.

_____ 6. **Enter the Customer Name and Phone Number.** Make sure you have spelled the Customer Name correctly. Double-check the Phone Number.

_____ **7. Enter the Vehicle Make/Type.** This information is essential.

_____ **8. Enter the VIN (vehicle identification number).** This is a string of coded data that is unique to the vehicle. The location of the VIN depends on the manufacturer. It is usually found on the dashboard next to the windshield on the driver's side. The VIN is a rich source of information. It is needed to properly use a scan tool to read diagnostic trouble codes. Double-check the VIN to ensure accuracy.

_____ **9. Enter the Mileage of the vehicle.** This information is part of the service history.

_____ **10. Complete the Service History.** The service history is a history of all the service operations performed on a vehicle. The service history alerts the technician to previous problems with the vehicle. In the case of recurring problems, it helps the technician identify solutions that were ineffective.

- A detailed service history is usually kept by the service facility where the vehicle is regularly serviced.
- Information on service performed on the vehicle at other service centers is not available unless the customer makes it available. For this reason, ask the customer about service performed outside of the present service center.

_____ **11. Identify the Customer Concern.** This should be a reasonably detailed and accurate description of the problem that the customer is having with the vehicle. The customer is usually the best source of information regarding the problem. This information can be used to perform the initial diagnosis. The customer has a passenger car. She says, "The engine in my car makes a very loud noise when I drive off. It almost sounds like a tractor." Enter her concern on the Customer Concern line.

_____ **12. Identify the Cause of Concern.** This will identify the problem. In this case, there may be several possible causes. Enter the possible causes on the Cause of Concern line.

_____ **13.** Ask the customer to read the text at the bottom of the Labor box. By signing on the line at the bottom of this box, the customer authorizes repair work on the vehicle according to the terms specified.

_____ **14. Identify Suggested Repairs/Maintenance.** This will identify what needs to be done to correct the problem.

_____ **15. Identify Services Performed.** This will identify the specific maintenance and repair procedures that were performed to correct the problem.

_____ **16. Provide Parts information.** This includes a numbered list of items used to complete the repair. It includes a description of each part with the price of the part.

_____ **17. Provide Labor information.** The Diagnosis Time and the Repair Time are totaled to give the Total Hours.

(*continued*)

Performance ✓ Checklist

Name _____ Date _____ Class _____

PERFORMANCE STANDARDS:
Level 4–Performs skill without supervision and adapts to problem situations.
Level 3–Performs skill satisfactorily without assistance or supervision.
Level 2–Performs skill satisfactorily, but requires assistance/supervision.
Level 1–Performs parts of skill satisfactorily, but requires considerable assistance/supervision.

Attempt (circle one)**: 1 2 3 4**

Comments:

_____

_____

_____

_____

PERFORMANCE LEVEL ACHIEVED: _____

_____ **1.** Safety rules and practices were followed at all times regarding this job.
_____ **2.** Tools and equipment were used properly and stored upon completion of this job.
_____ **3.** This completed job met the standards set and was done within the allotted time.
_____ **4.** No injury or damage to property occurred during this job.
_____ **5.** Upon completion of this job, the work area was cleaned correctly.

Instructor's Signature _____ Date_____