

AUTO TECH: DIESEL/1 (180 Hours)

Course No.: 79-90-55

COMPETENCY CHECKLIST

Student Name _____

Teacher Name _____ School Site _____

Start Date _____ Completion Date _____ Certificate Date _____

Teacher Signature _____ Student Signature _____

(Signatures verify completion of course competencies)

A. ORIENTATION AND SAFETY (5 hrs)

- _____ 1. Discuss scope and purpose of course
- _____ 2. Classroom policies and procedures
- _____ 3. Class/workplace first aid and safety
- _____ 4. Occupations w/impact on diesel techs
- _____ 5. OSHA workplace safety for diesel techs
- _____ 6. EPA impact on industry sector
- _____ 7. ARB legislation and transportation industry
- _____ 8. BAR standards for safety and environment
- _____ 9. Use of MSDS as it applies to auto industry
- _____ 10. Safety items required by regulations
- _____ 11. Role of NATEF in auto technician training
- _____ 12. NATEF standard for protective clothing/gloves
- _____ 13. NATEF standard for protective respiratory gear
- _____ 14. NATEF standard for protective eye gear
- _____ 15. NATEF standard for proper shop ventilation
- _____ 16. Proper material handling, storage& disposal
- _____ 17. Pass safety exam

B. RESOURCE MANAGEMENT (1 hr)

- _____ 1. Define terms related to topic
- _____ 2. Management of resources in field
- _____ 3. Examples of effective management
- _____ 4. Benefits of effective management
- _____ 5. Economic/environmental benefits/liabilities

C. TRADE MATHEMATICS (10 hrs)

- _____ 1. Practical application of math in industry
- _____ 2. Problem solving with whole numbers
- _____ 3. Solving problems with fractions
- _____ 4. Solving problems with decimals
- _____ 5. Changing fractions to decimals
- _____ 6. Changing decimals to fractions
- _____ 7. English system of measuring length
- _____ 8. English system of measuring weight

- _____ 9. English system of measuring volume/capacity
- _____ 10. English linear units of measurement
- _____ 11. English system units of volume/capacity
- _____ 12. Problem solving w/English measurements
- _____ 13. Measuring w/English system tools of trade
- _____ 14. Metric system of measuring length
- _____ 15. Metric system of measuring weight
- _____ 16. Metric system of measuring volume/capacity
- _____ 17. Metric system unit of liners measurement
- _____ 18. Metric system units of volume/capacity
- _____ 19. Problem solving w/metric measurements
- _____ 20. Measuring w/metric system tools of trade
- _____ 21. Solving geometric problems
- _____ 22. Solving algebraic problems
- _____ 23. Solving problems with percentages
- _____ 24. Reading and interpreting graphs
- _____ 25. Techniques for using a calculator

D. SERVICE MANUALS AND COMPUTER-BASED INFORMATION SYSTEMS (3 hrs)

- _____ 1. Different types of service manuals
- _____ 2. Types of info found in service manuals
- _____ 3. Demo use of service manuals
- _____ 4. Use of CD & web search to find auto tech info
- _____ 5. CD/web vs. service manuals for auto tech info

E. TOOLS AND EQUIPMENT (10 hrs)

- _____ 1. Identify/demo general shop hand tools
- _____ 2. Identify/demo general shop equipment
- _____ 3. Identify/demo listed specialty tools/equipment
- _____ 4. Specialty tools diesel preventative maintenance
- _____ 5. Engine diagnostic testing instruments

F. BASIC PRINCIPLES OF DIESEL (5 hrs)

- _____ 1. Explain diesel theory

- _____ 2. Characteristics of diesel fuel
- _____ 3. Various combustion chamber designs
- _____ 4. Different types of fuel supply systems
- _____ 5. Low-pressure supply pump operation
- _____ 6. Explain significance of fuel injection timing
- _____ 7. Explain nozzle spray patterns
- _____ 8. Compare pump injection to nozzle injection

G. BOSCH FUEL INJECTION SYSTEM (5 hrs)

- _____ 1. Bosch HPF injection pump operation
- _____ 2. Identify components of the HPF pump
- _____ 3. Disassemble a HPF pump
- _____ 4. Describe the pump drive
- _____ 5. Identify Bosch injection nozzles
- _____ 6. Identify nozzle holders
- _____ 7. Identify single plunger PF series pumps
- _____ 8. Governing of a PF pump
- _____ 9. Timing for Bosch Fuel Injection System

H. GENERAL MOTORS FUEL INJECTION SYSTEM (5 hrs)

- _____ 1. Describe GM Fuel Supply Systems
- _____ 2. Operation of a GM fuel supply pump
- _____ 3. Describe GM injections
- _____ 4. Performance problems related to GM system

I. LUCAS CAV INJECTION SYSTEM (5 hrs)

- _____ 1. Lucas CAV Fuel Supply Systems
- _____ 2. Operation of a CAV fuel supply pump
- _____ 3. Describe CAV injection
- _____ 4. Problems related to CAV systems

J. GENERAL DIAGNOSIS AND REPAIR (40 hrs)

- _____ 1. Inspect fluid levels and conditions
- _____ 2. Identify causes of leaks/determine action
- _____ 3. List reasons for engine noise/needed action
- _____ 4. Observe exhaust color & quantity/remedy
- _____ 5. Identify starting issues and needed action
- _____ 6. Identify problems/causes and needed action
- _____ 7. Engine vibration problems & needed action
- _____ 8. Check & record electronic diagnostic codes

K. CYLINDER HEAD AND VALVE TRAIN (40 hrs)

- _____ 1. Remove/clean/inspect/replace head
- _____ 2. Clean and inspect holes, studs and bolts
- _____ 3. Inspect for damage; determine action
- _____ 4. Disassemble head and inspect components
- _____ 5. Measure valve head height relative to deck
- _____ 6. Injector sleeves and seal/nozzle protrusion
- _____ 7. Inspect valve train components
- _____ 8. Reassemble cylinder head
- _____ 9. Overhead camshaft
- _____ 10. Inspect; determine needed action

- _____ 11. Inspect cam followers
- _____ 12. Adjust valve bridges/clearance/injectors

L. ENGINE BLOCK (45 hrs)

- _____ 1. Perform crankcase pressure test
- _____ 2. Remove/inspect/service/install components
- _____ 3. Disassemble, clean, inspect engine block
- _____ 4. Cylinder sleeve counter bore and lower bore
- _____ 5. Clean/inspect/measure cylinder walls or liners
- _____ 6. Replace/reinstall cylinder liners and seals
- _____ 7. Inspect in-block camshaft bearings
- _____ 8. Measure/replace/reinstall in-block camshaft
- _____ 9. Clean and inspect crankshaft
- _____ 10. Inspect main bearings; replace as needed
- _____ 11. Inspect, install and time gear train
- _____ 12. Inspect listed parts and perform needed action
- _____ 13. Piston-to-cylinder wall clearance
- _____ 14. Assemble components and install in block
- _____ 15. Condition of piston cooling jets; needed action
- _____ 16. Inspect/measure crankshaft vibration damper
- _____ 17. Install/align flywheel housing
- _____ 18. Inspect flywheel/flex plate & mounting surface

M. DIESEL ELECTRIC VEHICLES (2 hrs)

- _____ 1. Define concept of diesel electric vehicles
- _____ 2. Diesel electric vehicle vs. regular diesel

N. EMPLOYABILITY SKILLS (4 hrs)

- _____ 1. Employer requirements in employees
- _____ 2. Identify potential employers
- _____ 3. Design sample resume
- _____ 4. Importance of job application
- _____ 5. Complete job application correctly
- _____ 6. Importance of enthusiasm on job
- _____ 7. Appropriate appearance on job
- _____ 8. Continuous upgrading of job skills
- _____ 9. Customer service as way to build business