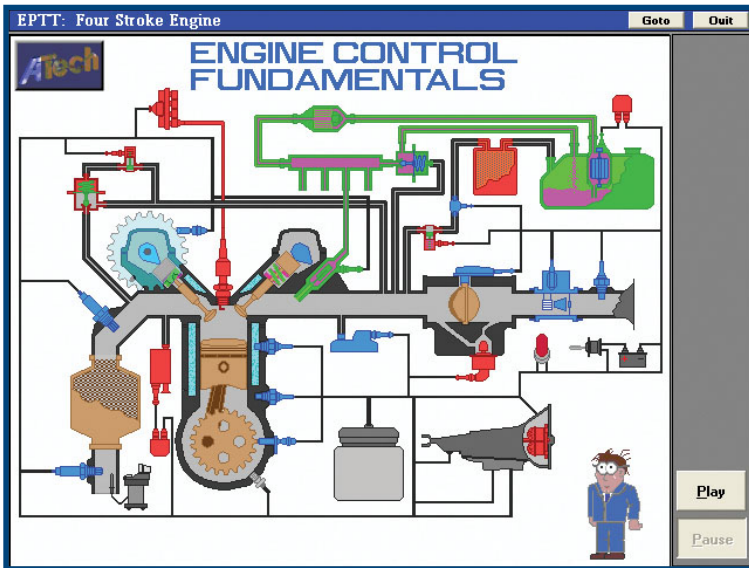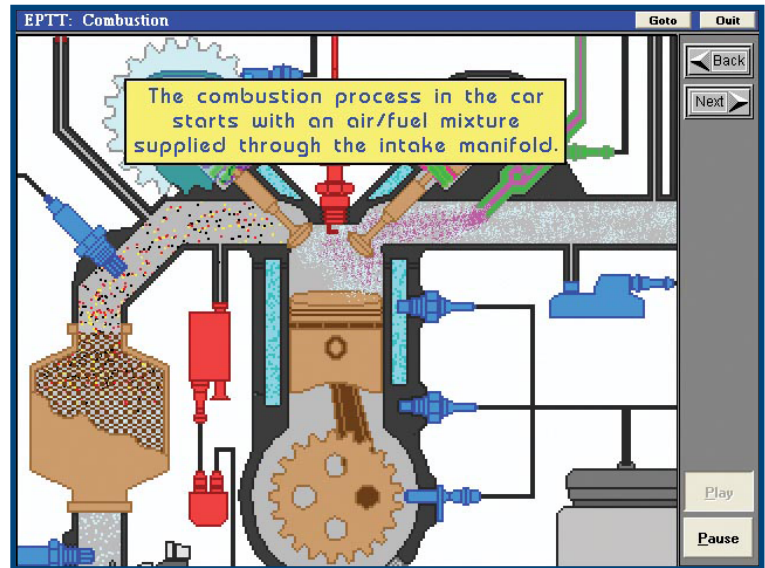# 3600 Series

Engine Control Fundamentals (model 3610)

This program consists of 21 student activities with over 60 animations—designed to present the fundamentals of engine control components. Includes "hands-on" digital voltmeter use.

Activity List:

1. Four Stroke Engine
2. Fuel System
3. Fuel Pump
4. Fuel Filter
5. Fuel Rail
6. Fuel Pressure Regulator
7. Fuel Injector
8. Fuel System Firing
9. Crankshaft Sensor
10. Camshaft Sensor
11. Powertrain Control Module
12. Intake Air Temperature
13. Mass Air Flow Sensor
14. Throttle Position Sensor
15. Manifold Absolute Pressure Sensor
16. Vehicle Speed Sensor
17. Heated Exhaust Gas Oxygen Sensor
18. Coolant Temperature Sensor
19. Engine Knock Sensor
20. Idle Air Control Valve
21. Torque Converter Clutch Solenoid

Engine Control Systems Operation (model 3620)

This program consists of 14 student activities with over 60 animations—designed to present "closed loop" emission control systems. Includes "hands-on" voltmeter and oscilloscope use.

Activity List:

1. Combustion
2. TPS and Intake Air
3. MAF and Intake Air
4. Fuel Injector Pulse Width (FIPW)
5. Oxygen Sensor and Closed Loop
6. Crank Sensor and Spark Timing
7. Spark Advance and Knock Sensor
8. Cam Sensor and Injector Firing
9. IAT and FIPW
10. ECT, Cooling Fan and IAC
11. Transmission: VSS, TCC and Shift Solenoids
12. EGR System
13. EVAP System
14. SAIR System
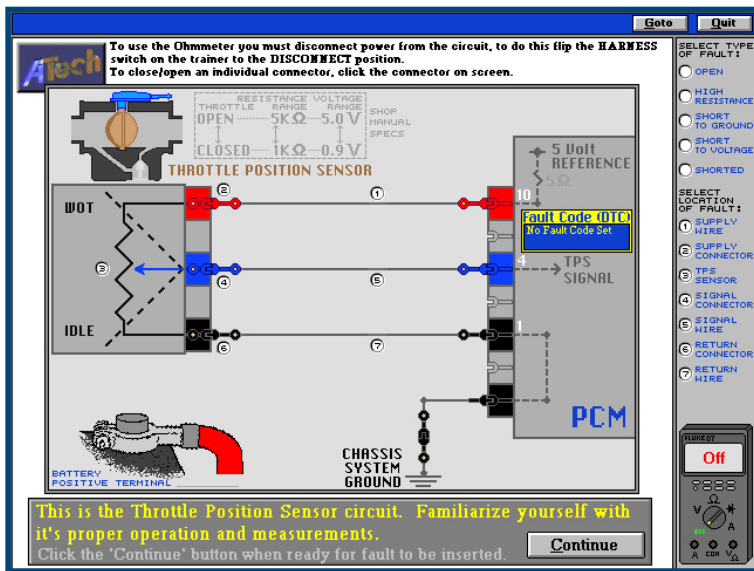
Engine Control Diagnostic Fundamentals (model 3630)

This program consists of 16 student activities with over 45 animations. This course includes a troubleshooting section which consists of 5 automotive circuits to choose from (Fuel Pump Relay, ECT, Fuel Injector, IAT, TPS) and more than 60 faults (at least 12 per circuit). It also has instructor fault insertion capabilities.

Activity List:

1. Circuit Elements
2. Digital Multi-Meter (DMM)
3. Metric Prefixes
4. Principle of Electrical Circuits: Current
5. Principle of Electrical Circuits: Voltage
6. Principle of Electrical Circuits: Resistance
7. Principle of Electrical Circuits: OHM's Law
8. Series Circuit Characteristics
9. Parallel Circuit Characteristics
10. Series/Parallel Circuit Characteristics
11. Electrical Circuit Faults: Open Circuits
12. Electrical Circuit Faults: High Resistance
13. Electrical Circuit Faults: Short to Ground
14. Electrical Circuit Faults: Short to Voltage
15. Using Shop Manuals

Student Record Keeping

All programs provide student record keeping. Each student is issued a student record with a unique I.D. number and password. The student's performance is recorded in their file as the student proceeds through the program.

Classroom Management

Each program includes an Instructor Management Program (IMP). With menu selections from the IMP, the student USB drive is prepared and records can be accumulated and transferred to the instructor's computer. Centralized storage of student records over a Microsoft™ network is also available. Program includes remote fault insertion capability.

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