

FIGURE 29-1 The throttle pedal is connected to the accelerator pedal position (APP) sensor. The electronic throttle body includes a throttle position sensor to provide throttle angle feedback to the vehicle computer. Some systems use a Throttle Actuator Control (TAC) module to operate the throttle blade (plate).

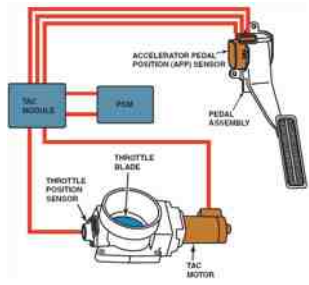


FIGURE 29-2 The opening of the throttle plate can be delayed as long as 30 milliseconds (0.030 sec.) to allow time for the amount of fuel needed to catch up to the opening of the throttle plate.

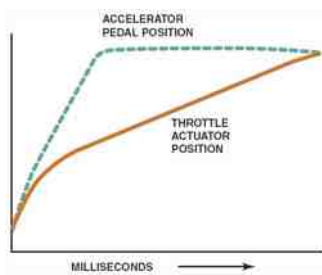
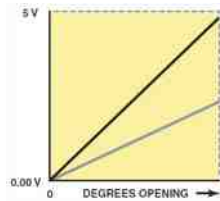
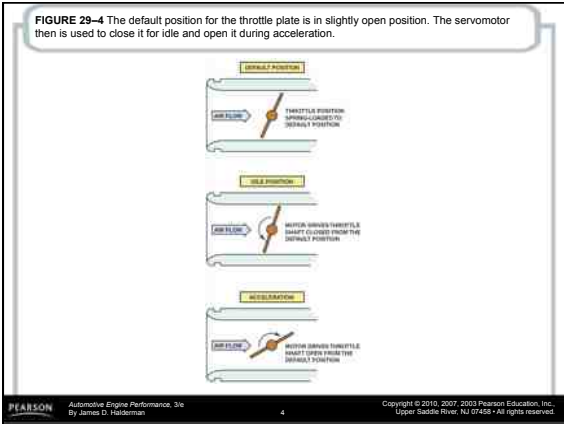
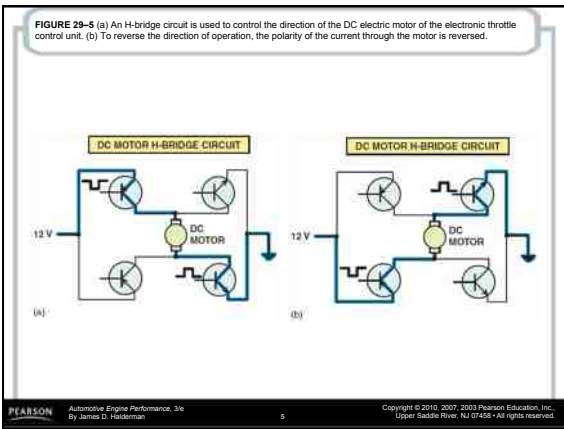


FIGURE 29-3 A typical accelerator pedal position (APP) sensor, showing two different output voltage signals that are used by the PCM to determine accelerator pedal position. Two (or three in some applications) are used as a double check because this is a safety-related sensor.







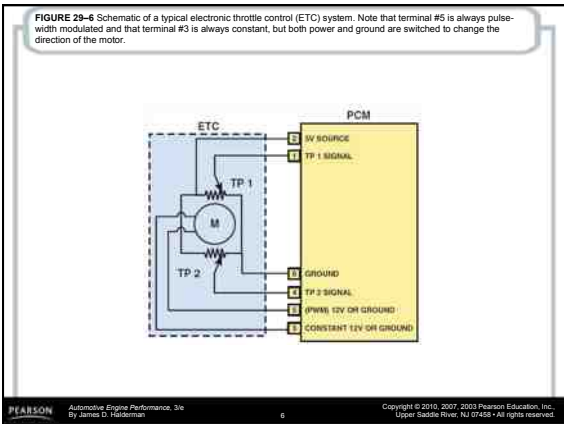
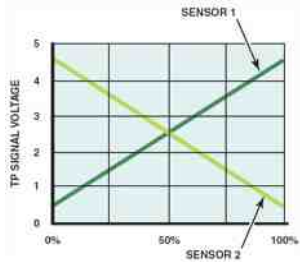


FIGURE 29-7 The two TP sensors used on the throttle body of an electronic throttle body assembly produce opposite voltage signals as the throttle is opened. The total voltage of both combined at any throttle plate position is 5 volts.



PEARSON Automotive Engine Performance, 3/e By James D. Heldman Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.

FIGURE 29-8 (a) A "reduced power" warning light indicates a fault with the electronic throttle control system on some General Motors vehicles. (b) A symbol showing an engine with an arrow pointing down is used on some General Motors vehicles to indicate a fault with the electronic throttle control system.



PEARSON Automotive Engine Performance, 3/e By James D. Heldman Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.

FIGURE 29-9 A wrench symbol warning lamp on a Ford vehicle. The symbol can also be green.



PEARSON Automotive Engine Performance, 3/e By James D. Heldman Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.

FIGURE 29-10 A symbol used on a Chrysler vehicle indicating a fault with the electronic throttle control.



FIGURE 29-11 The throttle plate stayed where it was moved, which indicates that there is a problem with the electronic throttle body control assembly.



FIGURE 29-12 A corroded electronic throttle control assembly shown with the cover removed.



FIGURE 29-13 Notice the small motor gear on the left drives a larger plastic gear (black), which then drives the small gear in mesh with the section of a gear attached to the throttle plate. This results in a huge torque increase from the small motor and helps explain why it could be dangerous to insert a finger into the throttle body assembly.



PEARSON

Automotive Engine Performance, 3/e
By James D. Halderman

13

Copyright © 2010, 2007 Pearson Education, Inc.
Upper Saddle River, NJ 07458 • All rights reserved.
