

FIGURE 6-1 The ethanol molecule showing two carbon atoms, six hydrogen atoms, and one oxygen atom.

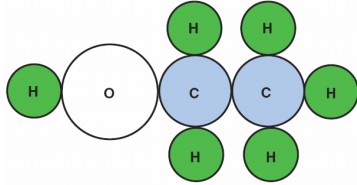


FIGURE 6-2 Some retail stations offer a variety of fuel choices, such as this station in Ohio where E10 and E85 are available.



FIGURE 6-3 The location of the variable fuel sensor can vary, depending on the make and model of vehicle, but it is always in the fuel line between the fuel tank and the fuel injectors.

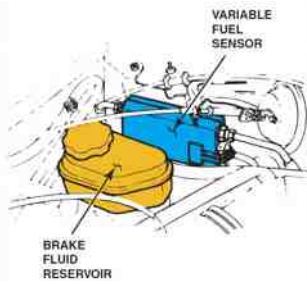
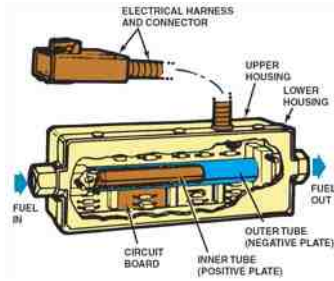


FIGURE 6-4 A cutaway view of a typical variable fuel sensor.



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

FIGURE 6-5 A pump for E85 (85% ethanol and 15% gasoline). E85 is available in more locations every year.



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

FIGURE 6-6 A flex-fuel vehicle often has a yellow gas cap, which is labeled E85/gasoline.



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

FIGURE 6-7 A vehicle emission control information (VECI) sticker on a flexible fuel vehicle indicating that it can use ethanol from 0 to 85%.



FIGURE 6-8 The molecular structure of methanol showing the one carbon atom, four hydrogen atoms, and one oxygen atom.

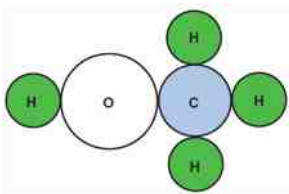


FIGURE 6-9 Sign on methanol pump shows that methyl alcohol is a poison and can cause skin irritation and other personal injury. Methanol is used in industry as well as being a fuel.



FIGURE 6-10 Propane fuel storage tank in the trunk of a Ford taxi.



FIGURE 6-11 The blue sticker on the rear of this vehicle indicates that it is designed to use compressed natural gas.



FIGURE 6-12 A CNG storage tank from a Honda Civic GX shown with the fixture used to support it while it is being removed or installed in the vehicle. Honda specifies that three technicians be used to remove or install the tank through the rear door of the vehicle due to the size and weight of the tank.



FIGURE 6-13 The fuel injectors used on this Honda Civic GX CNG engine are designed to flow gaseous fuel instead of liquid fuel and cannot be interchanged with any other type of injector.



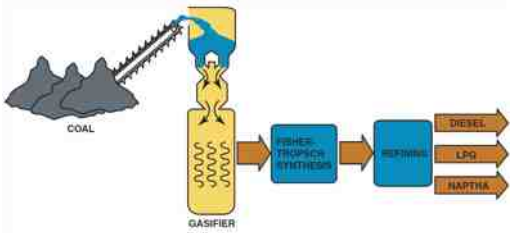
PEARSON Automotive Engine Performance, 3/e By James D. Helderman 13 Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.

FIGURE 6-14 This CNG pump is capable of supplying compressed natural gas at either 3,000 PSI or 3,600 PSI. The price per gallon is higher for the higher pressure.



PEARSON Automotive Engine Performance, 3/e By James D. Helderman 14 Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.

FIGURE 6-15 A Fischer-Tropsch processing plant is able to produce a variety of fuels from coal.



PEARSON Automotive Engine Performance, 3/e By James D. Helderman 15 Copyright © 2010, 2007, 2003 Pearson Education, Inc. Upper Saddle River, NJ 07458 • All rights reserved.
