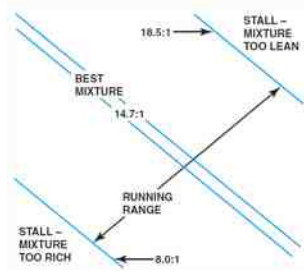
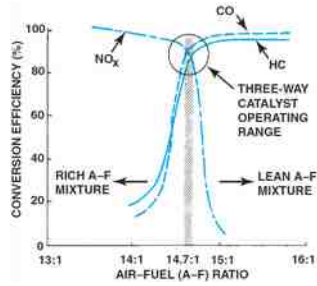


FIGURE 5-4 An engine will not run if the air-fuel mixture is either too rich or too lean.



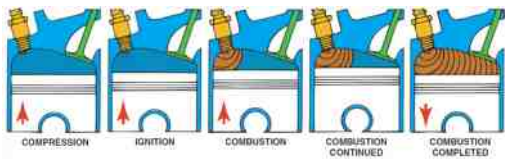
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FIGURE 5-5 With a three-way catalytic converter, emission control is most efficient with an air-fuel ratio between 4.65 to 1 and 14.75 to 1.



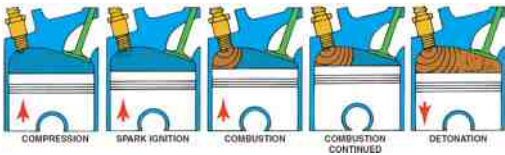
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FIGURE 5-6 Normal combustion is a smooth, controlled burning of the air-fuel mixture.



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FIGURE 5-7 Detonation is a secondary ignition of the air-fuel mixture. It is also called spark knock or pinging.



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FIGURE 5-8 A pump showing regular with a pump octane of 87, plus rated at 89, and premium rated at 93. These ratings can vary with brand as well as in different parts of the country.



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FIGURE 5-9 The posted octane rating in most high-altitude areas shows regular at 85 instead of the usual 87.



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FIGURE 5-10 This fuel tank indicates that the gasoline is blended with 10% ethanol (ethyl alcohol) and can be used in any gasoline vehicle. E85 contains 85% ethanol and can only be used in vehicles specifically designed to use it.



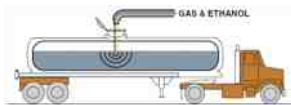
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FIGURE 5-11 A container with gasoline containing alcohol. Notice the separation line where the alcohol-water mixture separated from the gasoline and sank to the bottom.



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FIGURE 5-12 In-line blending is the most accurate method for blending ethanol with gasoline because computers are used to calculate the correct ratio.



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FIGURE 5-13 Sequential blending uses a computer to calculate the correct ratio as well as the prescribed order in which the products are loaded.

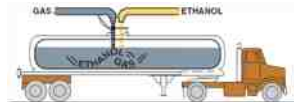


FIGURE 5-14 Splash blending occurs when the ethanol is added to a tanker with gasoline and is mixed as the truck travels to the retail outlet.

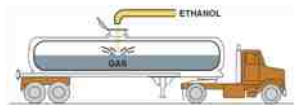


FIGURE 5-15 Checking gasoline for alcohol involves using a graduated cylinder and adding water to check if the alcohol absorbs the water.

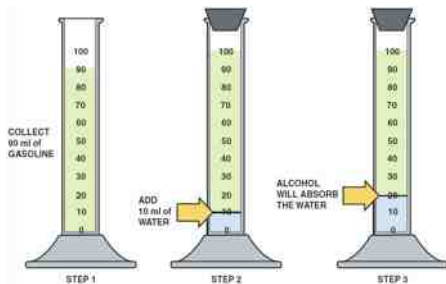


FIGURE 5-16 The gas cap on a Ford vehicle notes that BP fuel is recommended.



FIGURE 5-17 Many gasoline service stations have signs posted warning customers to place plastic fuel containers on the ground while filling. If placed in a trunk or pickup truck bed equipped with a plastic liner, static electricity could build up during fueling and discharge from the container to the metal nozzle, creating a spark and possible explosion. Some service stations have warning signs not to use cell phones while fueling to help avoid the possibility of an accidental spark creating a fire hazard.



TESTING FOR ALCOHOL CONTENT IN GASOLINE



1 A fuel composition tester (GPK Fuel-Alyze J-4417) is the recommended tool, by General Motors, to use to test the alcohol content of gasoline.

2 This battery-powered tester uses light-emitting diodes (LEDs), surface-mount terminals, and two small electrodes for the fuel sample.

TESTING FOR ALCOHOL CONTENT IN GASOLINE



3 The first step is to verify the proper operation of the tester by measuring the air frequency by selecting AC Hz(Ω) on the meter. The air frequency should be between 35 Hz and 45 Hz.



4 After verifying that the tester is capable of correctly reading the air frequency, gasoline is poured into the testing cell of the tester.

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TESTING FOR ALCOHOL CONTENT IN GASOLINE



5 Reverse the AC frequency as shown on the meter and subtract 50 from the reading, e.g., 60.50 - 50.00 = 10.50. This number (10.5) is the percentage of alcohol in the gasoline sample.



6 Adding additional amounts of ethyl alcohol (ethanol) increases the frequency reading.

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