Why it Matters

Gasoline Engines

A gasoline engine is one type of internal-combustion engine. The diagram below illustrates the steps in one cycle of operation for a gasoline engine. During compression, shown in **(a),** work is done by the piston as it adiabatically compresses the fuel-and-air mixture in the cylinder. Once maximum compression of the gas is reached, combustion takes place. The chemical potential energy released during combustion increases the internal energy of the gas, as shown in **(b).** The hot, high-pressure gases from the combustion reaction expand in volume, pushing the piston and turning the crankshaft, as shown in **(c).** Once all of the work is done by the piston, some energy is transferred as heat through the walls of the cylinder. Even more energy is transferred by the physical removal of the hot exhaust gases from the cylinder, as shown in **(d).** A new fuel-air mixture is then drawn through the intake valve into the cylinder by the downward-moving piston, as shown in **(e).**