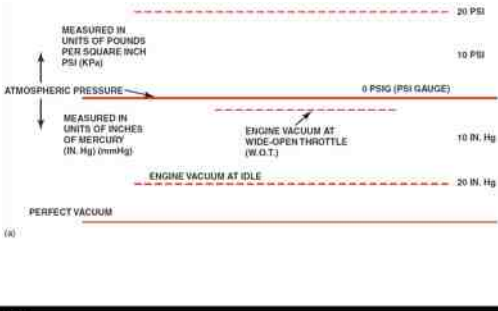


**FIGURE 22-1 (a)** As an engine is accelerated under a load, the engine vacuum drops. This drop in vacuum is actually an increase in absolute pressure in the intake manifold. A MAP sensor senses all pressures greater than that of a perfect vacuum.




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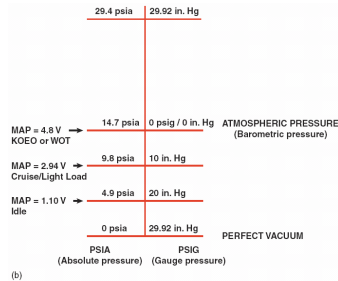
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**FIGURE 22-1 (CONTINUED) (b)** The relationship between absolute pressure, vacuum and gauge pressure.




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**FIGURE 22-2** A plastic MAP sensor used for training purposes showing the electronic circuit board and electrical connections.




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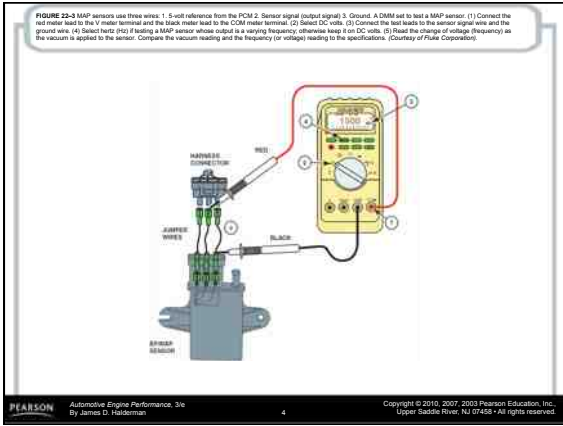
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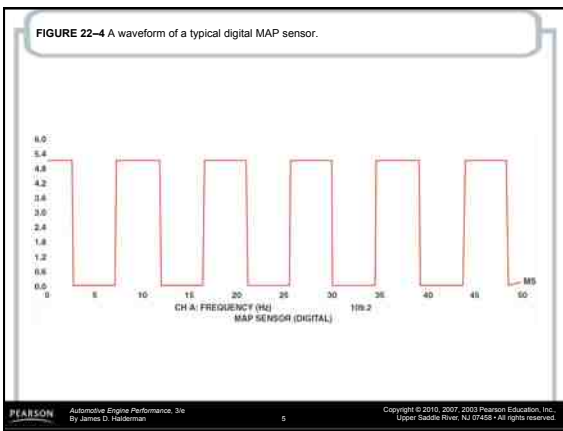
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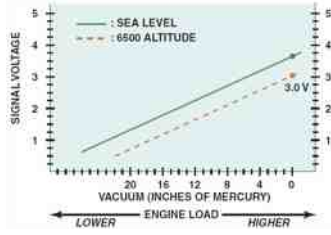
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FIGURE 22-6 Altitude affects the MAP sensor voltage.



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FIGURE 22-7 A typical hand-operated vacuum pump.



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