

FIGURE 9-1 A supercharger on a Ford V-8.



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FIGURE 9-2 A turbocharger on a Toyota engine.



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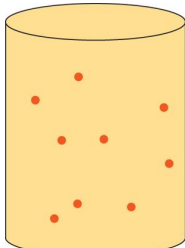
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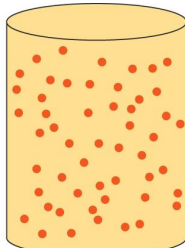
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FIGURE 9-3 The more air and fuel that can be packed in a cylinder, the greater the density of the air-fuel charge.



LOW DENSITY



HIGH DENSITY

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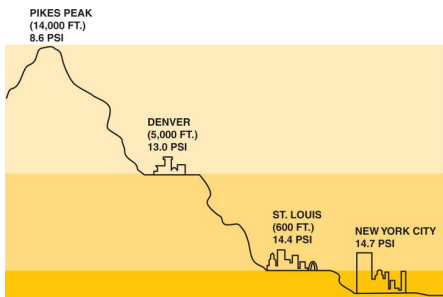
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FIGURE 9-4 Atmospheric pressure decreases with increases in altitude.



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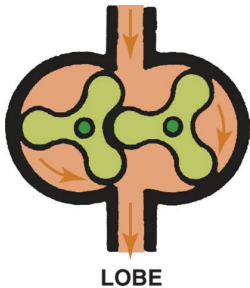
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FIGURE 9-5 A roots-type supercharger uses two lobes to force the air around the outside of the housing and into the intake manifold.



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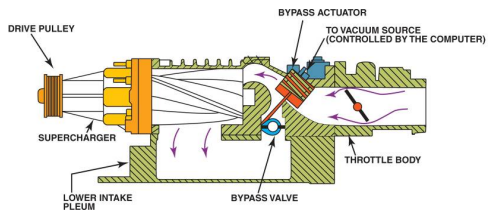
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FIGURE 9-6 The bypass actuator opens the bypass valve to control boost pressure.



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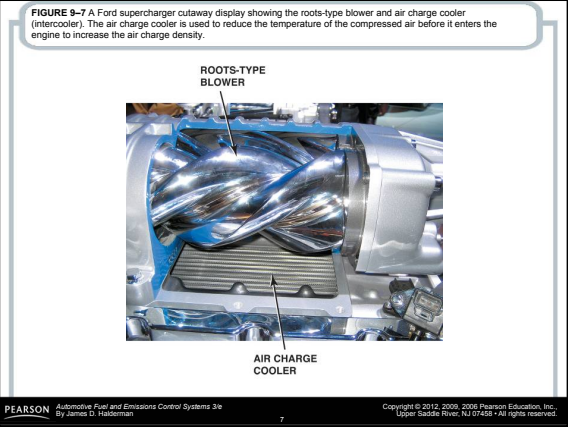
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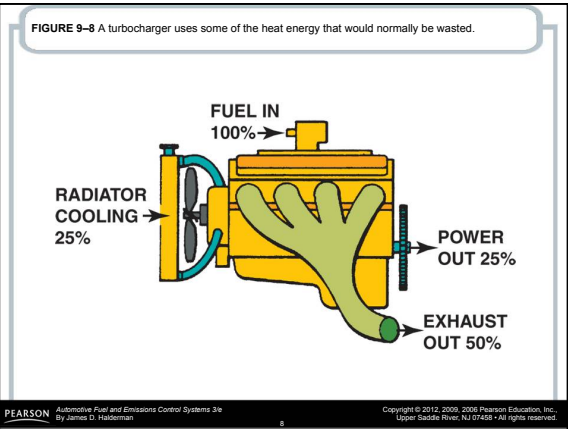
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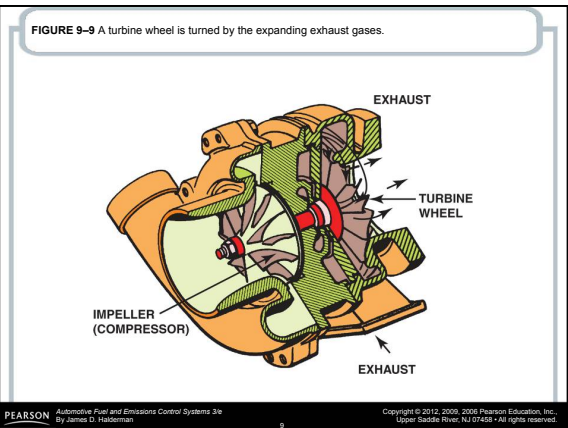
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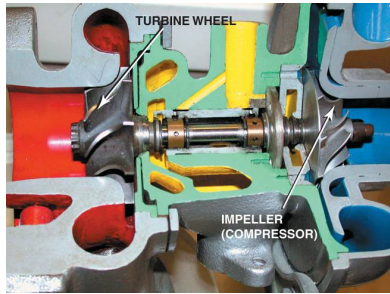
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**FIGURE 9-10** The exhaust drives the turbine wheel on the left which is connected to the impeller wheel on the right through a shaft. The bushings that support the shaft are lubricated with engine oil under pressure.



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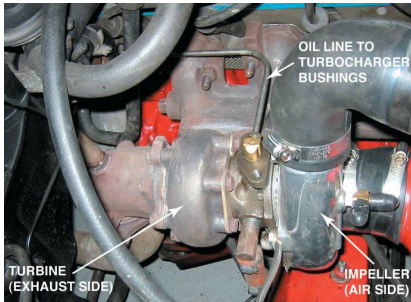
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**FIGURE 9-11** Engine oil is fed to the center of the turbocharger to lubricate the bushings and returns to the oil pan through a return line.



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**FIGURE 9-12** The unit on top of this Subaru that looks like a radiator is the intercooler, which cools the air after it has been compressed by the turbocharger.



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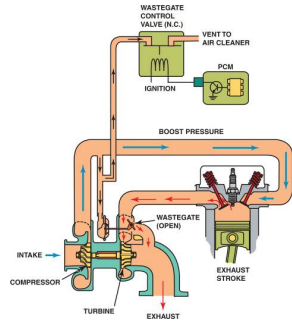
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**FIGURE 9-13** A wastegate is used on many turbocharged engines to control maximum boost pressure. The wastegate is controlled by a computer-controlled valve.




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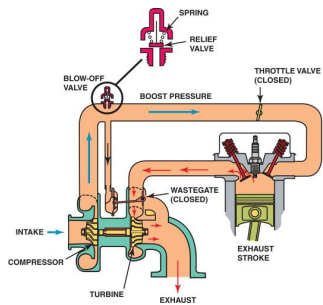
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**FIGURE 9-14** A blow-off valve is used in some turbocharged systems to relieve boost pressure during deceleration.




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**FIGURE 9-15** A dual turbocharger system installed on a small block Chevrolet V-8 engine.




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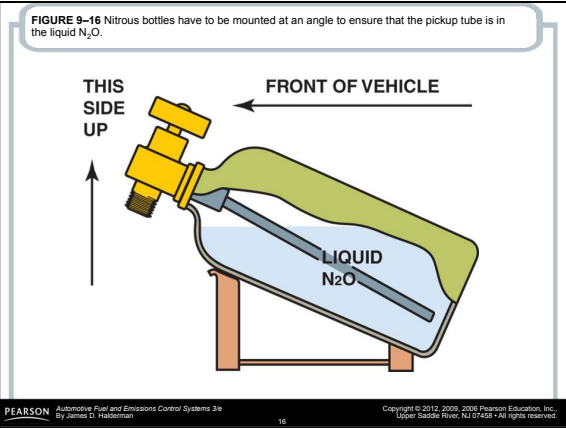
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