

FIGURE 21-1 A typical alternator on a Chevrolet V-8 engine.



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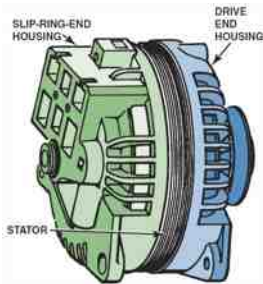
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FIGURE 21-2 The end frame toward the drive belt is called the drive-end housing and the rear section is called the slip-ring-end housing.



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FIGURE 21-3 An OAP on a Chevrolet Corvette alternator.



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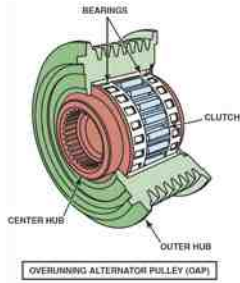
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**FIGURE 21-4** An exploded view of an overrunning alternator dampener showing all of the internal parts.




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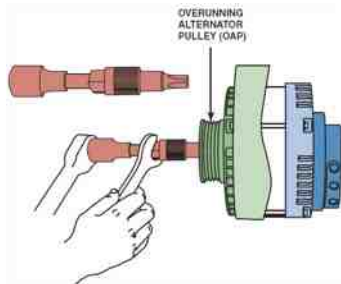
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**FIGURE 21-5** A special tool is needed to remove and install overrunning alternator pulleys or dampeners.




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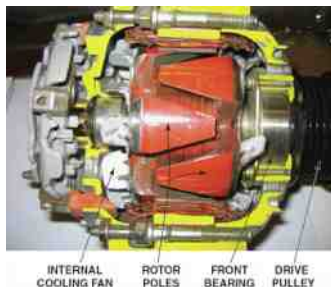
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**FIGURE 21-6** A cutaway of an alternator, showing the rotor and cooling fan that is used to force air through the unit to remove the heat created when it is charging the battery and supplying electrical power for the vehicle.




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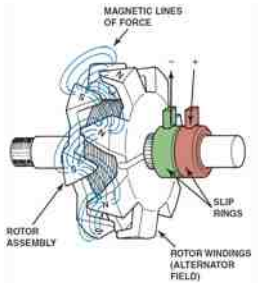
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**FIGURE 21-7** Rotor assembly of a typical alternator. Current through the slip rings causes the "fingers" of the rotor to become alternating north and south magnetic poles. As the rotor revolves, these magnetic lines of force induce a current in the stator windings.




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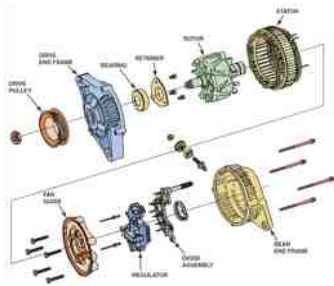
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**FIGURE 21-8** An exploded view of a typical alternator showing all of its internal parts including the stator windings.




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**FIGURE 21-9** A rectifier usually includes six diodes in one assembly and is used to rectify AC voltage from the stator windings into DC voltage suitable for use by the battery and electrical devices in the vehicle.




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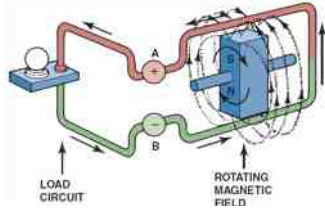
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**FIGURE 21-10** Magnetic lines of force cutting across a conductor induce a voltage and current in the conductor.




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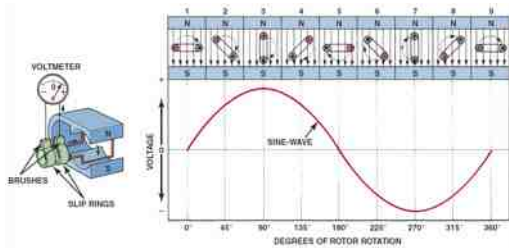
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**FIGURE 21-11** A sine wave (shaped like the letter S on its side) voltage curve is created by one revolution of a winding as it rotates in a magnetic field.




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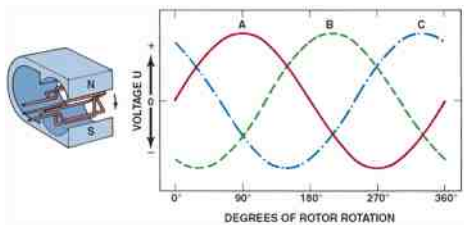
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**FIGURE 21-12** When three windings (A, B, and C) are present in a stator, the resulting current generation is represented by the three sine waves. The voltages are 120 degrees out of phase. The connection of the individual phases produces a three-phase alternating voltage.




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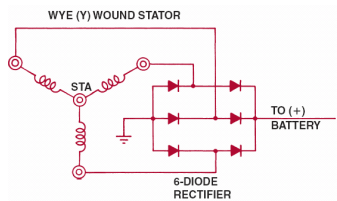
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FIGURE 21-13 Wye-connected stator winding.



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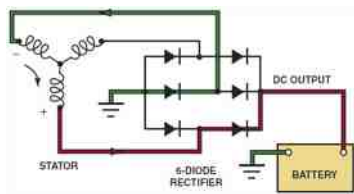
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FIGURE 21-14 As the magnetic field, created in the rotor, cuts across the windings of the stator, a current is induced. Notice that the current path includes passing through one positive (+) diode on the way to the battery and one negative (-) diode as a complete circuit is completed through the rectifier and stator.



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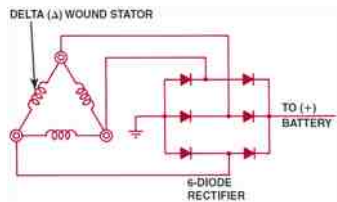
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FIGURE 21-15 Delta-connected stator winding.



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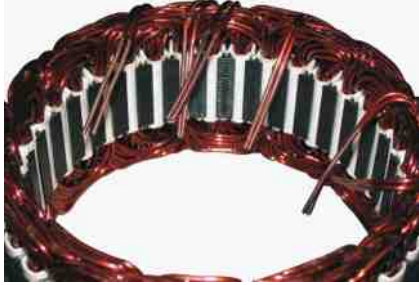
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FIGURE 21-16 A stator assembly with six, rather than the normal three, windings.



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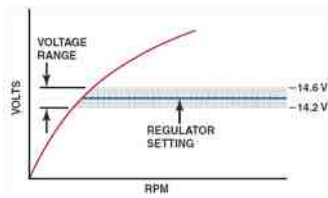
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FIGURE 21-17 Typical voltage regulator range.



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FIGURE 21-18 A typical electronic voltage regulator with the cover removed showing the circuits inside.



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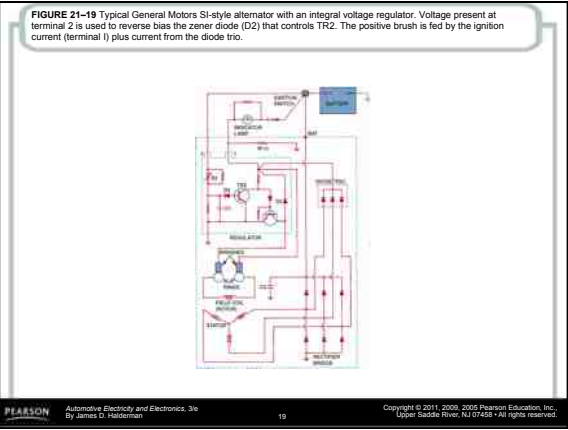
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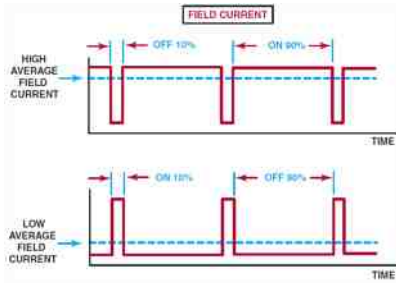
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FIGURE 21-22 The amount of time current is flowing through the field (rotor) determines the alternator output.



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