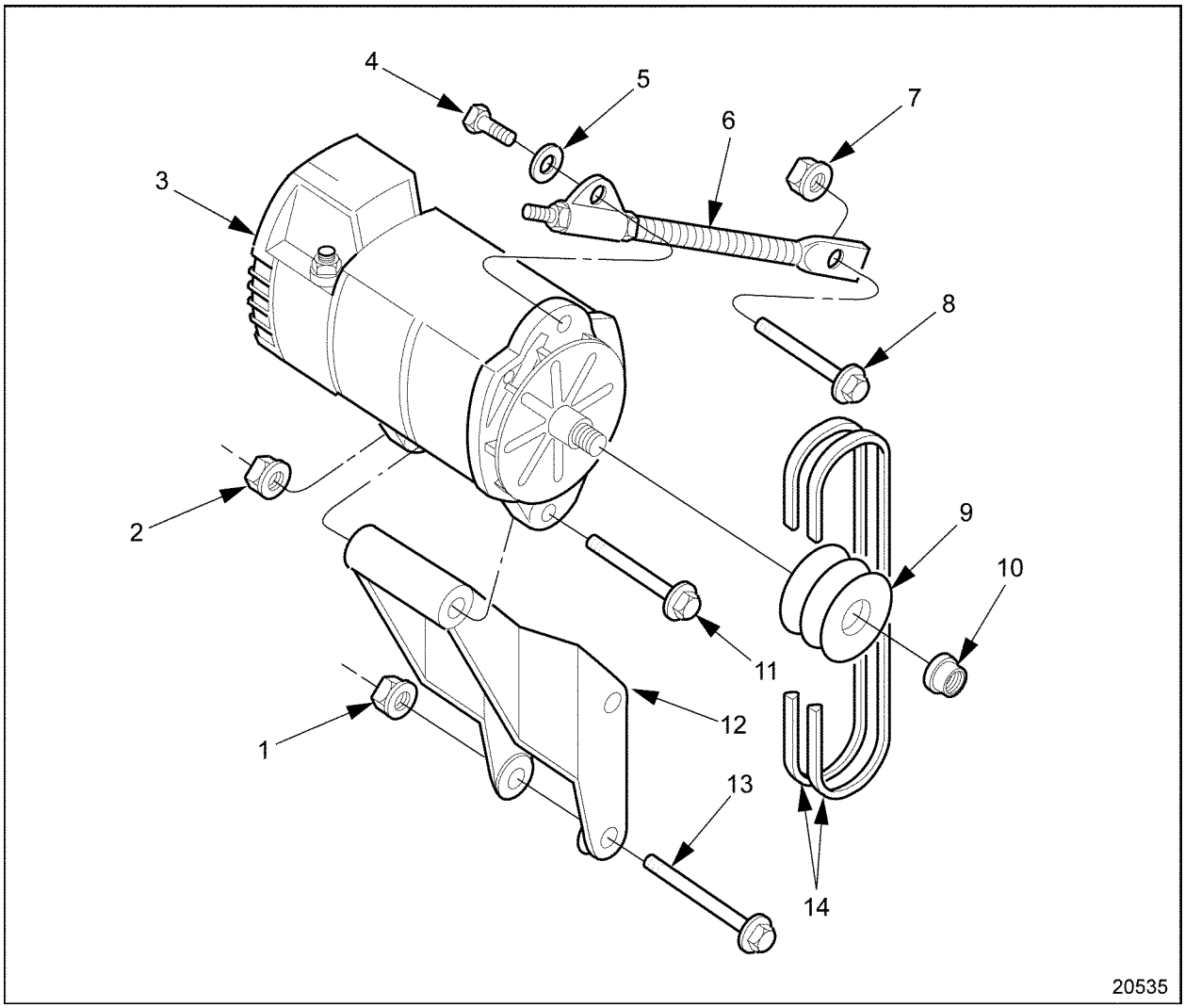
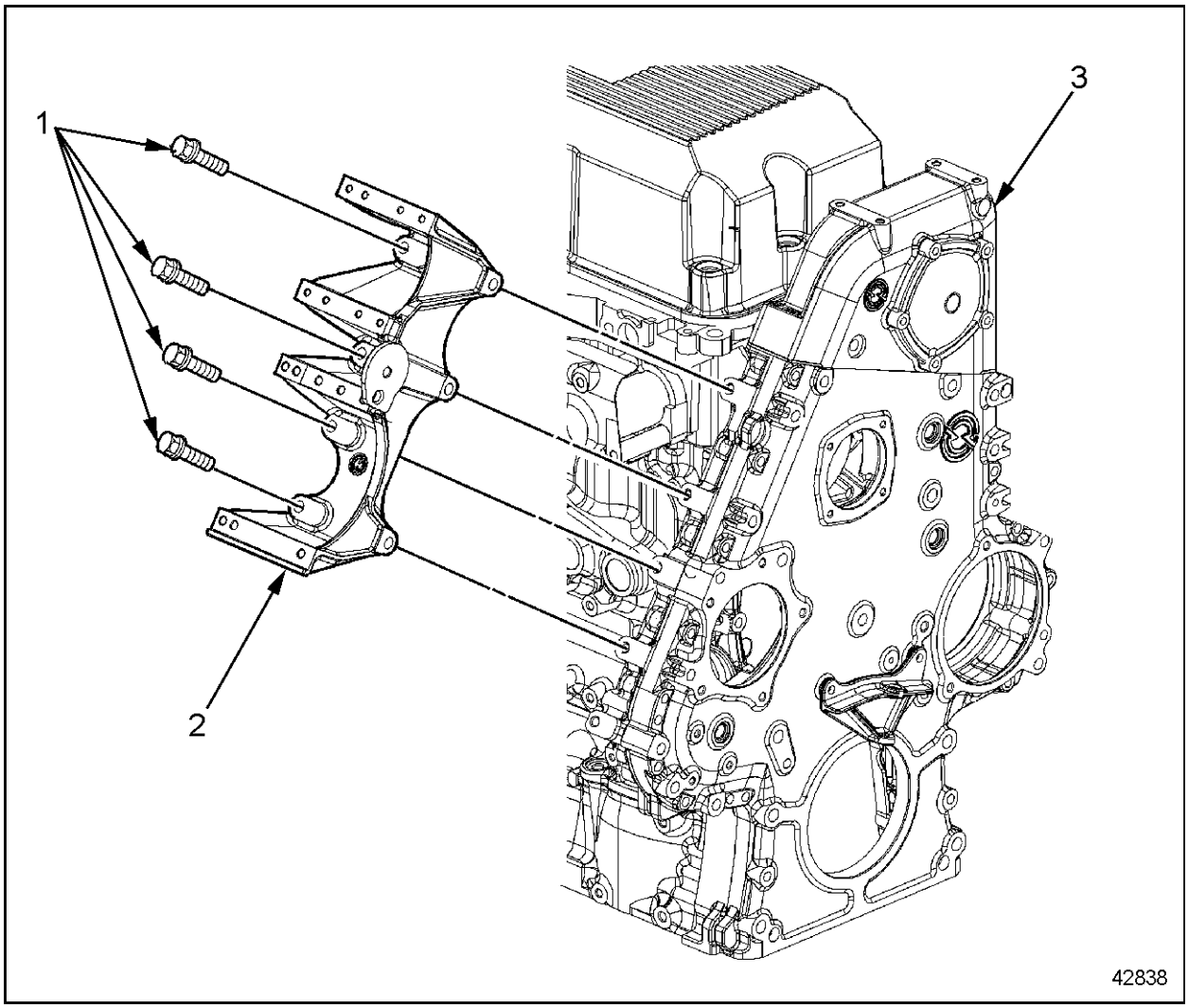


1. Nut (2)
2. Nut
3. Alternator
4. Bolt, Alternator-to-Adjusting Rod
5. Washer
6. Alternator Adjusting Rod
7. Nut
8. Bolt, Adjusting Rod-to-Engine
9. Pulley, Alternator Drive
10. Locknut
11. Bolt, Alternator-to-Mounting Bracket
12. Mounting Bracket
13. Bolt, Mounting Bracket-to-Engine (2)
14. Drive Belts

Figure 8-66 Typical Alternator and Related Parts — Trucks and Industrial

Detroit Diesel has released a new alternator mounting bracket for the Series 60 2002 Engine, mounting bolt torque specifications remain standard. See Figure 8-66a and Figure 8-66b .



1. Bolts
2. Mounting Bracket
3. Gear Case

Figure 8-66a Alternator Mounting Bracket for Series 60 2002 Engine

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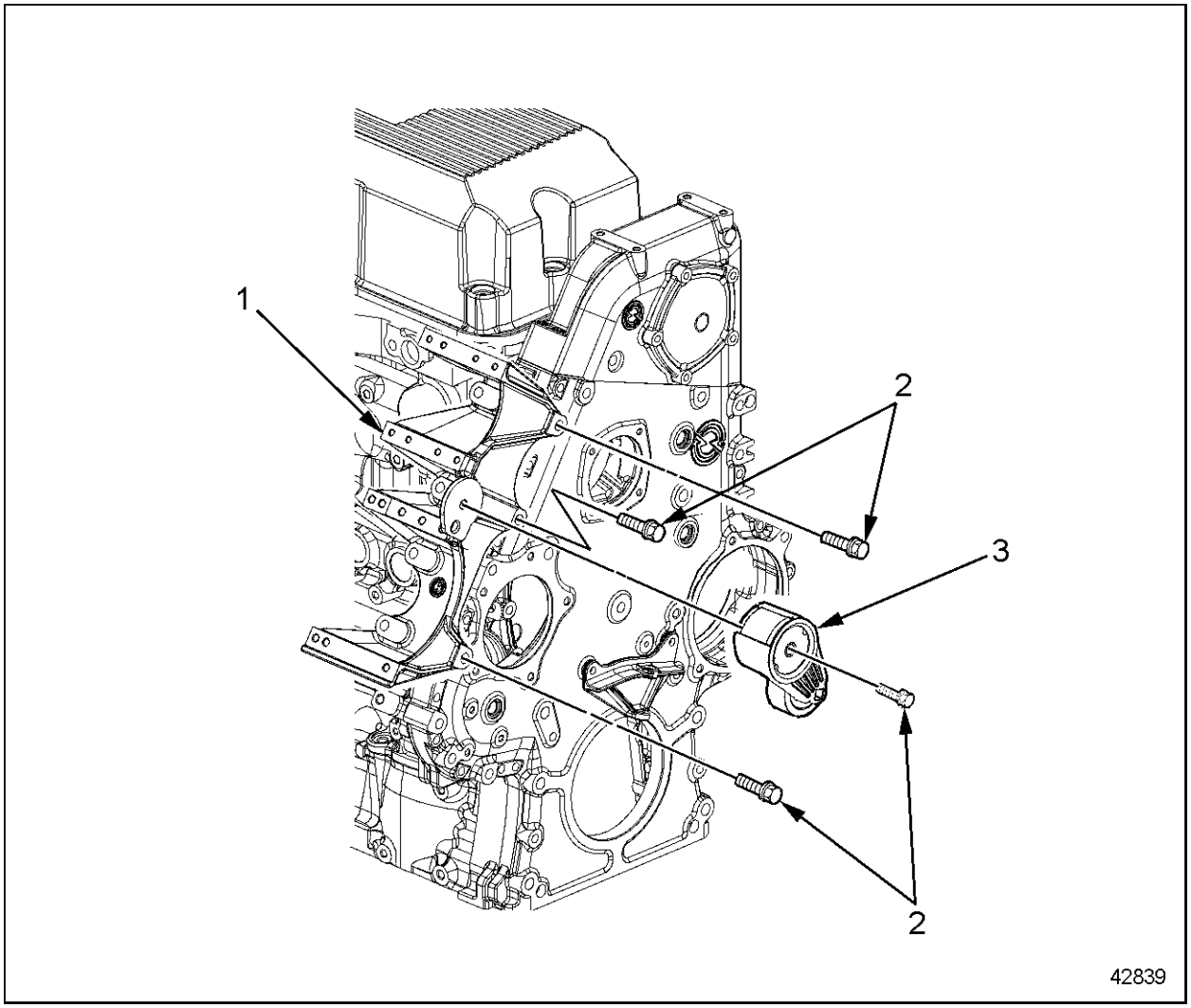
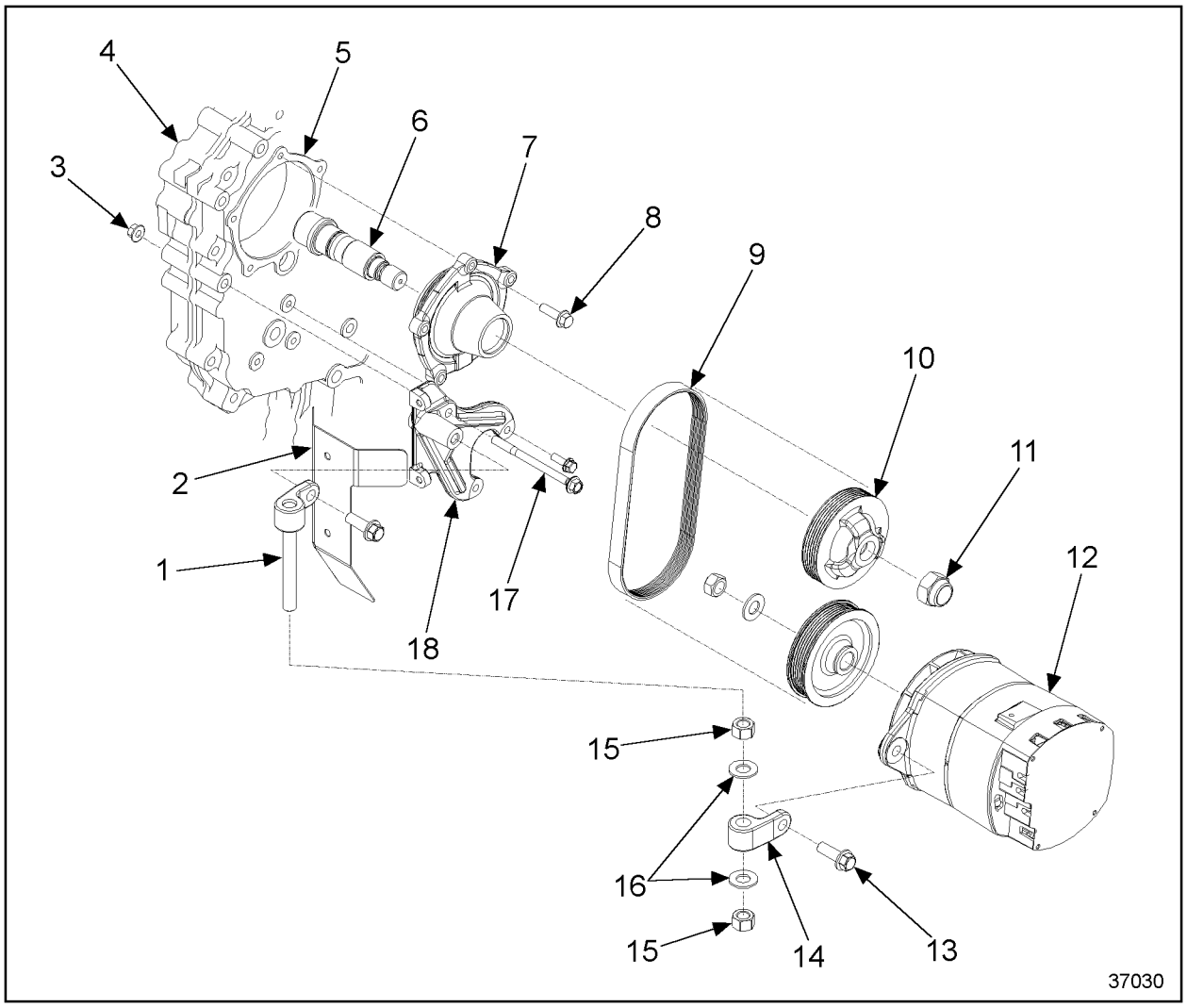


1. Alternator Bracket
2. Bolts
3. Tensioner

Figure 8-66b Tensioner and Related Parts Series 60 2002 Engine



1. Belt Guard Support
2. Belt Guard
3. Nut
4. Gear Case Front Cover
5. Alternator Drive Gasket
6. Alternator Drive Shaft
7. Alternator Drive Bearing Housing
8. Alternator Drive Mounting Bolt
9. Drive Belt
10. Alternator Drive Pulley
11. Alternator Drive Pulley Nut
12. Alternator
13. Belt Guard Support Bracket Bolt
14. Belt Guard Support Bracket
15. Belt Guard Support Nut
16. Belt Guard SupportWasher
17. Alternator Support Bolt
18. Alternator Support

Figure 8-67 Typical Alternator and Related Parts — Heat Exchanger-Cooled Pleasure Craft Marine

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The hinge mounted 25 - SI and 33 – SI alternators and the bracket mounted 50 DN alternator are alternating current (AC), self-rectifying units. See Figure 8-68.

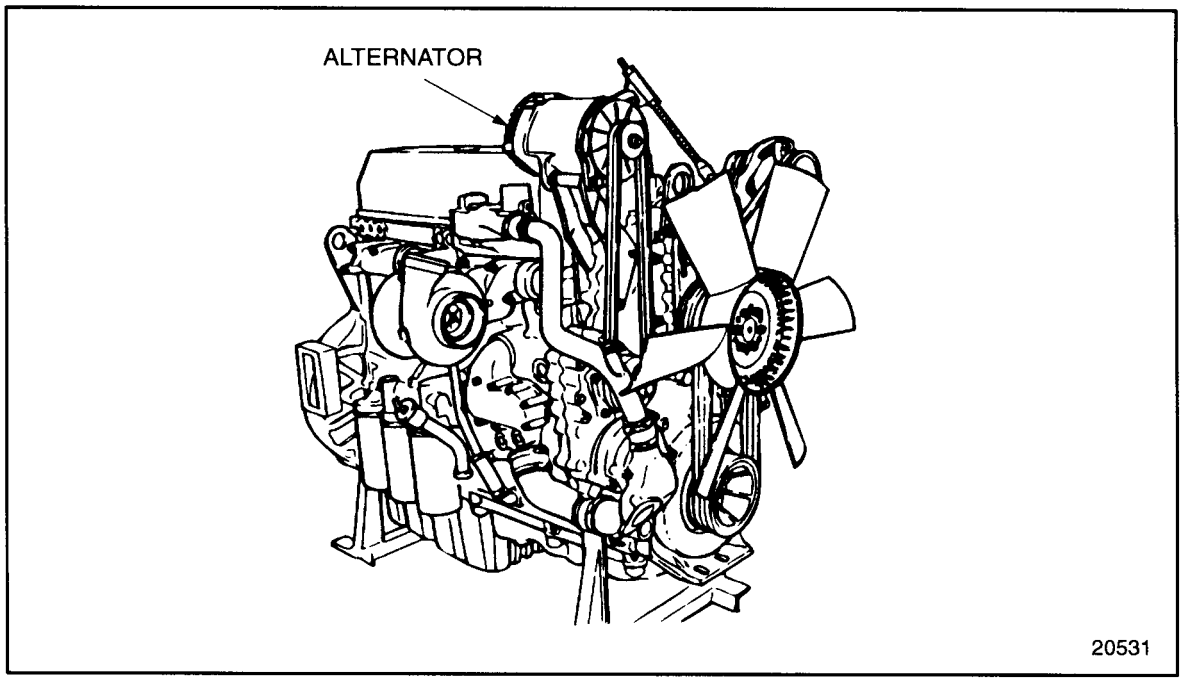

Figure 8-68 Alternator Mounting

On engines equipped with the SI series Delco-Remy alternators, the voltage regulator is typically electronic and is located inside the alternator. Refer to the appropriate manufacturer's service instructions for complete regulator and alternator servicing information.

The alternator is front mounted and belt driven using the accessory drive pulley. The accessory drive pulley is gear driven by the bull gear. Refer to section 1.28 for accessory drive information.

In 1995, the former 50 DN alternator drive system replaced the early 50 DN alternator drive system previously used on coach engines. The changes to the drive system took effect with the engine serial numbers listed in Table 8-1.

Change	Engine Serial Number	Build Date
Alternator Pulley	6R-274215	Nov. 27, 1995
Accessory Drive Asm.	6R-276579	Dec. 16, 1995
Tensioner/Support Plate/Adjusting Bolt	6R-277807	Dec. 20, 1996

Table 8-1 Effectivity of Improved 50 DN Alternator Drive System Changes

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The former 50 DN alternator drive system included a new tensioner assembly, support plate, tensioner adjusting bolt, alternator assembly and accessory drive assembly. The top pulley of the tensioner assembly is the same size as the bottom pulley (127 mm), and all pulleys in the system had front and back flanges to insure proper belt positioning during installation and improved belt tracking during engine operation.

The early and former tensioner assembly, support plate, and tensioner adjusting bolt are not separately interchangeable on a part-for-part basis and should not be used on an engine.

To simplify installation of the DN alternator drive belt and ensure proper running tension throughout drive belt life, an auto belt tensioner assembly replaced the former tensioner/support plate assembly on December 15, 1997, effective with engine serial number 6R392714. See Figure 8-69. Use of the auto tensioner eliminates the need for periodic belt tension inspection. Only the auto belt tensioner assembly is used on engines with 50 DN alternators.

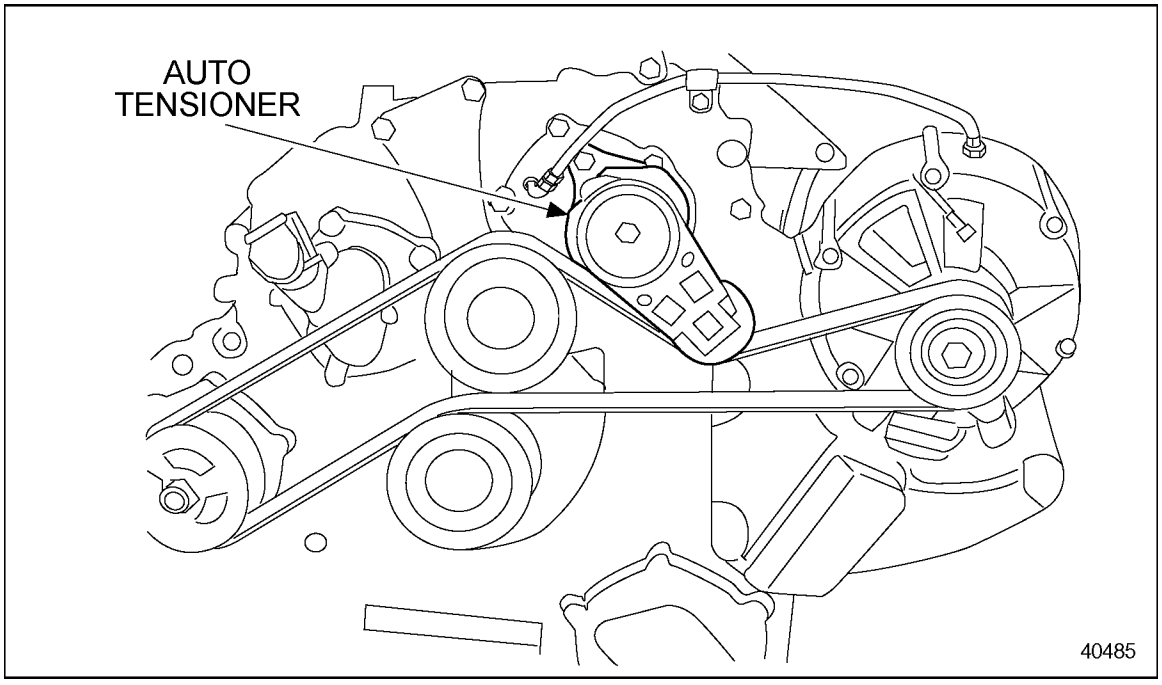

Figure 8-69 Auto Belt Tensioner Assembly with 50 DN Alternator

Effective June 2000, the No. 4 size vent hose on the 50DN alternator was replaced by a No. 6 braided hose to improve venting of the alternator and extend alternator life. In addition, the vent line connection point on the engine was moved from a tapped hole in the gear case to a tapped hole in the auto belt tensioner mounting plate.

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8.2.1 Repair of Alternator

Refer to the OEM guidelines for alternator repair procedures.

8.2.2 Removal of Alternator

Precleaning is not necessary.

Remove the alternator as follows:

CAUTION:

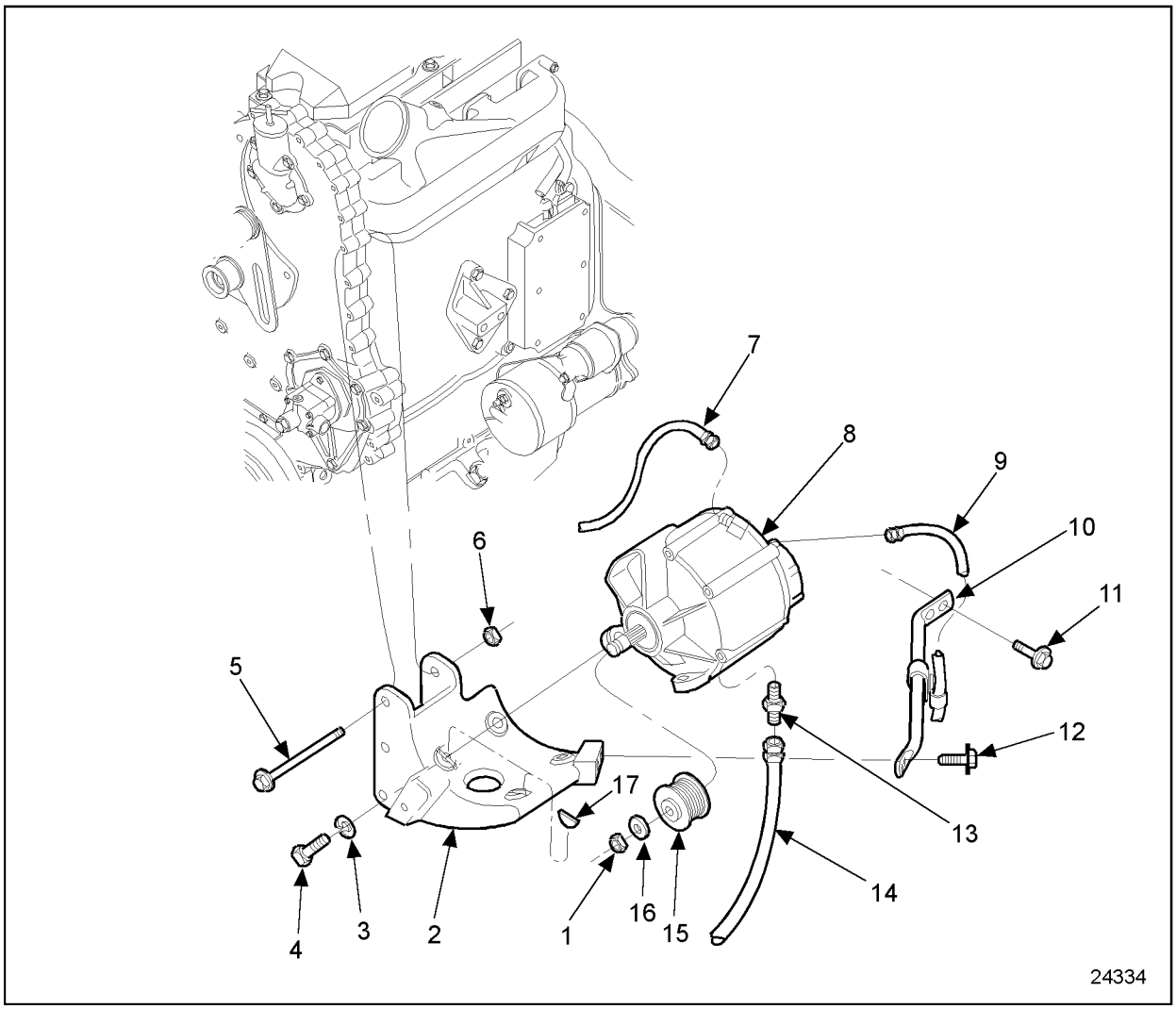
To avoid injury from electrical shock, follow OEM furnished operating instructions prior to usage.

1. Disconnect the cables at the batteries. Tag each lead to ensure correct connection when the alternator is reinstalled.
2. If the alternator has more than the output cable lead, disconnect all other leads from the alternator, and tag each one to ensure correct installation.
3. Remove the alternator output cable.
4. Remove the drive belts. See Figure 8-66.
5. If an auto belt tensioner assembly is installed, use a breaker bar with a 3/4 inch drive to rotate the tensioner pulley upward to relieve belt tension.

CAUTION:

To avoid injury to hands and fingers from the spring-loaded auto belt tensioner violently snapping back, do not cut the belt to remove it.

6. If an auto belt tensioner assembly is not installed, loosen the alternator mounting bolts and adjusting rod nut to allow slack in the drive belts.
7. If an oil-cooled alternator is installed, disconnect the oil supply, return, and vent lines. Plug the ends of the oil lines and the oil inlet and outlet on the alternator to prevent the entrance of dirt. See Figure 8-70 for former or see Figure 8-71 for current.
8. If required, remove bolt or bolts from auto belt tensioner and remove tensioner.



1. Pulley Nut
2. Alternator Mounting Bracket
3. Washer (4)
4. Bolt, Bracket to Alternator (4)
5. Bolt, Bracket to Front Cover (3)
6. Nut (3)
7. Alternator Vent Hose
8. Alternator
9. Oil Supply Tube
10. Alternator Bracket Support
11. Bolt, Support to Block (2)
12. Bolt, Bracket Support (2)
13. Oil Drain Tube Connector
14. Oil Drain Tube
15. Alternator Pulley
16. Washer
17. Woodruff Key (2)

Figure 8-70 Former Coach Alternator and Related Parts

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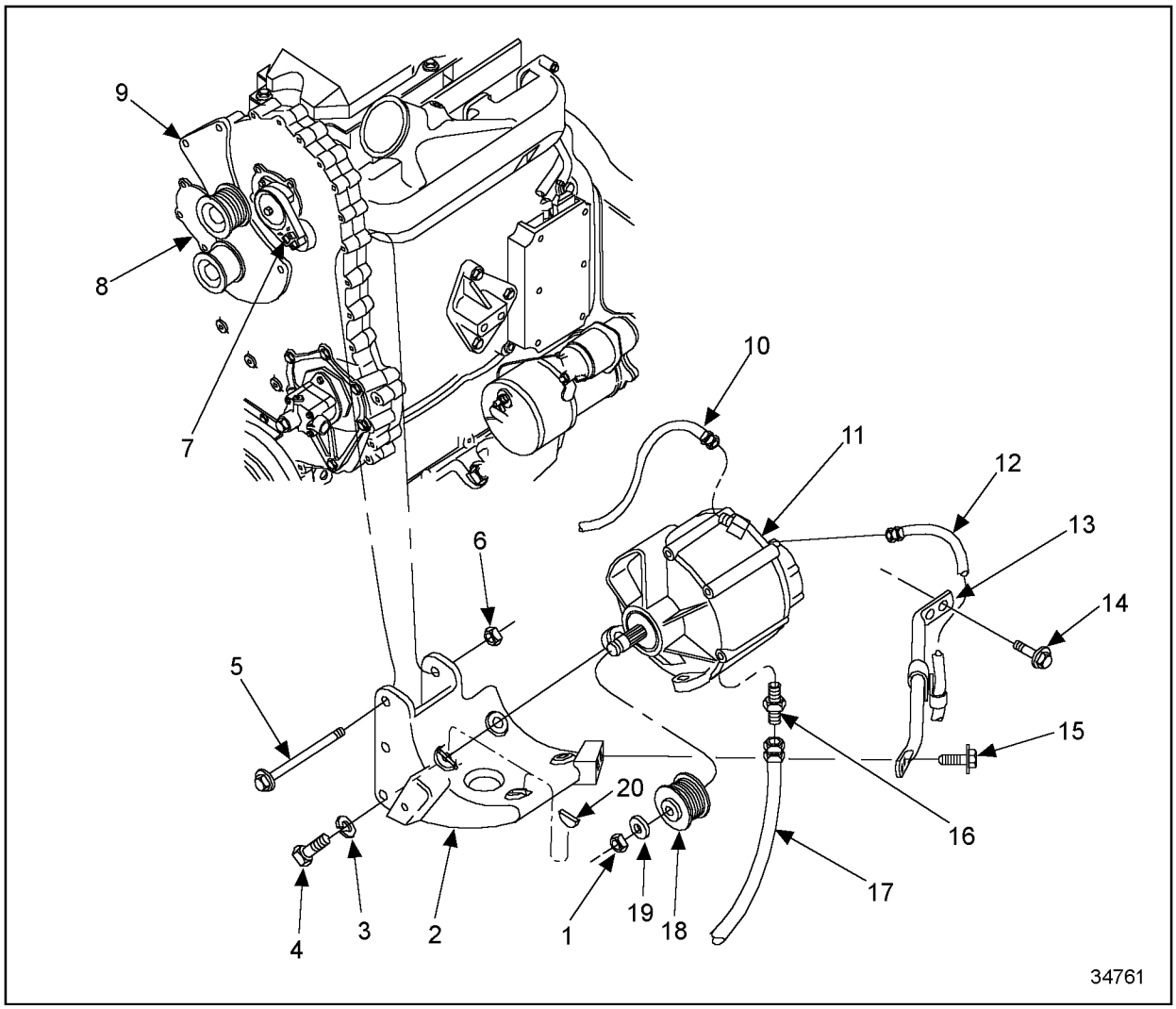

1. Pulley Nut
2. Alternator Mounting Bracket
3. Washer (4)
4. Bolt, Bracket to Alternator (4)
5. Bolt, Bracket to Front Cover (3)
6. Nut (3)
7. Auto Tensioner
8. Idler Assembly
9. Auto Tensioner Mount
10. Alternator Vent Hose
11. Alternator
12. Oil Supply Tube
12. Alternator Brace Bracket
14. Bolt, Support to Block (2)
15. Bolt, Bracket Support (2)
16. Oil Drain Tube Connector
17. Oil Drain Tube
18. Alternator Pulley
19. Washer
20. Woodruff Key (2)

Figure 8-71 Current Coach Alternator and Related Parts

9. While supporting the alternator, remove the adjusting rod bolt and hardened washer. See Figure 8-66.
10. Remove the nut and washer at the rear alternator mounting flange.
11. While supporting the alternator, remove the alternator-to-bracket bolt to prevent it from falling. See Figure 8-66.
12. Remove the two woodruff keys, if equipped.
13. Remove and retain the alternator pulley locknut, alternator pulley, and fan from the unit. See Figure 8-66.

8.2.2.1 Inspection of Alternator

Refer to OEM guidelines for alternator inspection procedures.

8.2.3 Installation of Alternator

Install alternator as follows:

1. Install alternator mounting bracket to the gearcase, if it was removed. Torque the mounting bolts to 58–73 N·m (43–54 lb·ft). See Figure 8-66.
2. If a 50 DN alternator is used, install the pulley and locknut to the alternator (if removed). See Figure 8-71 for former or see Figure 8-70 for current. If an air cooled alternator is used, install the fan, drive pulley and locknut to the alternator (if removed). Torque the pulley retaining nut to 305 N·m (225 lb·ft).
3. If the pulley was not removed, check the retaining nut for proper torque. Torque the retaining nut to 305 N·m (225 lb·ft), as necessary.
4. If the pulley was removed during disassembly, install two woodruff keys in the mounting bracket.
5. Position the alternator on the mounting bracket, and align the holes in the alternator mounting flanges with the tube in the bracket support.

NOTE:
There are two holes in the front alternator end frame mounting flanges. One is threaded and one is not threaded. The threaded hole is positioned up and is used to secure the alternator to the adjusting rod.

6. Install the alternator-to-bracket bolt and locknut. Insert the adjusting rod bolt, with washer installed, through the adjusting rod bracket and into the threaded hole in the alternator end frame. Finger-tighten both bolts. See Figure 8-66.
7. If the alternator is oil-cooled, replace the oil supply, return, and vent lines and tighten fittings securely.
8. If removed install auto belt tensioner and secure with bolt or bolts. Torque center bolt to 30-38 N·m (22-28 lb·ft) and bracket bolt to 58-73 N·m (43-54 lb·ft) if required.

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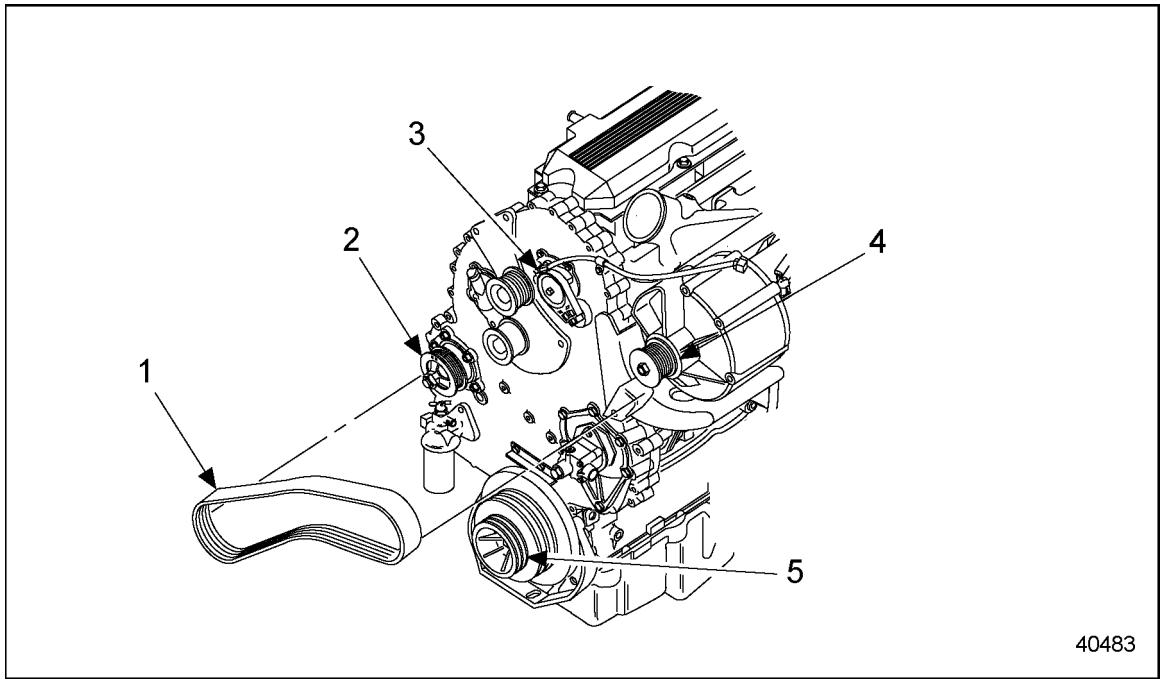
NOTICE:
Failure to properly orient the drive belt when installing it over the pulleys may result in belt damage at engine startup.

9. Depending on the application, install the belt(s) carefully over the pulleys on the crankshaft or alternator drive and the drive belt tensioner. If an auto belt tensioner is installed, use a breaker bar with a 3/4 inch drive to rotate the tensioner pulley upward for belt installation. Ensure the grooved and smooth faces of the belt are properly positioned on the pulleys before taking up slack. See Figure 8-72.



1. Poly-Vee Belt
2. Accesory Drive Pulley
3. Belt Adjusting Bracket
4. Alternator Pulley
5. Crankshaft Pulley

Figure 8-72 Coach Poly-Vee Belt Installation

10. If an auto belt tensioner assembly is not installed, adjust the alternator belt tension. For twin belt-driven alternator refer to section 8.2.3.1. For twin-vee belt-driven 50 DN alternator refer to section 8.2.3.1. For poly-vee belt-driven 50 DN alternator refer to section 8.2.3.2.
11. Torque the alternator-to-mounting bracket bolt and nut and the alternator-to-adjusting rod bracket bolt to 81-95 N·m (60-70 lb·ft).
12. Attach the wires and cables to the alternator. Ensure that each one is correctly installed in the location from which it was removed. Keep all connections clean and tight.

8.2.3.1 Checking Twin-Vee Belt Driven Alternator Belt Tension

The recommended tension for new belts is 556 N (125 lb). However, because new belts lose tension rapidly during the first few minutes of operation, it is important to check the tension after running the engine for 10 to 15 minutes. To check belt tension, use the following procedure:

NOTICE:
Failure to properly orient the drive belt when installing it over the pulleys may result in belt damage at engine startup.

⚠ CAUTION:
To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

1. Tension the new drive belts to 556 N (125 lb) using a belt tension tool, J 41251-B or equivalent.

⚠ CAUTION:
Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. **Always start and operate an engine in a well ventilated area.** **If operating an engine in an enclosed area, vent the exhaust to the outside.** **Do not modify or tamper with the exhaust system or emission control system.**

2. Start and run the engine from 10 to 15 minutes to allow the belts to warm up and seat in the pulley grooves.
3. Stop the engine, and allow it to cool for 10 to 15 minutes.
4. Measure belt tension:
   [a] If tension is 445 N (100 lb) or more, no tensioning is required.
   [b] If tension is less than 445 N (100 lb), retension the belt to 445 N (100 lb).
5. Check belt tension every 100 hours or 7,500 miles (12,000 km). Refer to section 13.13.10 and retension if necessary.

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