



Disassembly and Assembly

Preliminary Information

C175-16 Generator Set Engine

WYB1-Up (Generator Set)



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Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	129-1966	Multipurpose Grease	1



Illustration 29

g01285012

1. Attach a suitable lifting device onto fuel rail (13). The weight of fuel rail (13) is approximately (). Install fuel rail (13). Install bolts (12).

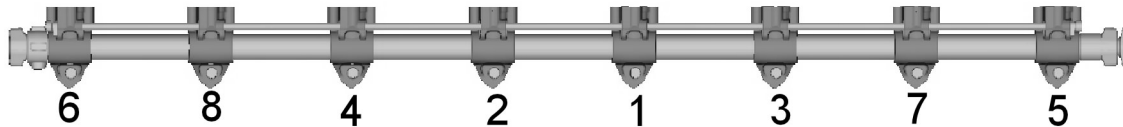


Illustration 30

g01285086

2. Tighten bolts (12) in the sequence that is shown in Illustration 30. Tighten bolts (12) to a torque of $100 \pm 20 \text{ N}\cdot\text{m}$ ($74 \pm 15 \text{ lb}\cdot\text{ft}$).

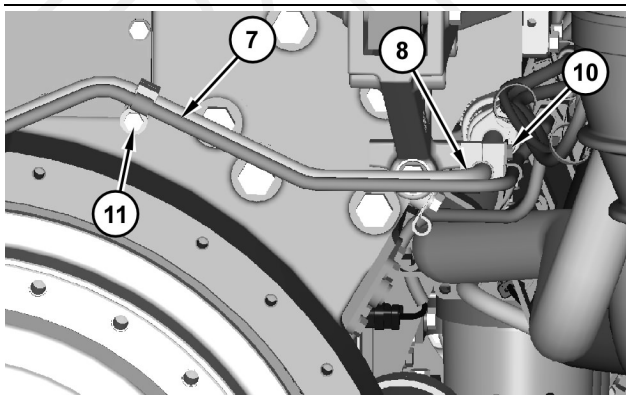


Illustration 31

g01285323

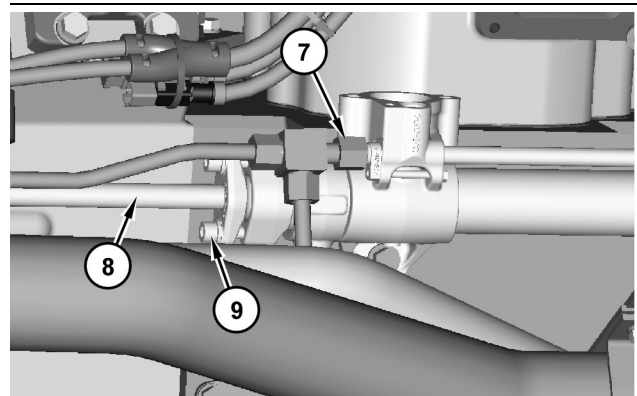


Illustration 32

g01285008

3. Lubricate the O-ring seals with clean engine oil. Lubricate the ends of tube assembly (8) with Tooling (A). Install tube assembly (8) and the O-ring seals. Install tube assembly (7). Install bolts (9) hand tight. Install bolts (10) and (11) hand tight. Evenly tighten bolts (9) to a torque of $20 \text{ N}\cdot\text{m}$ ($15 \text{ lb}\cdot\text{ft}$).

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

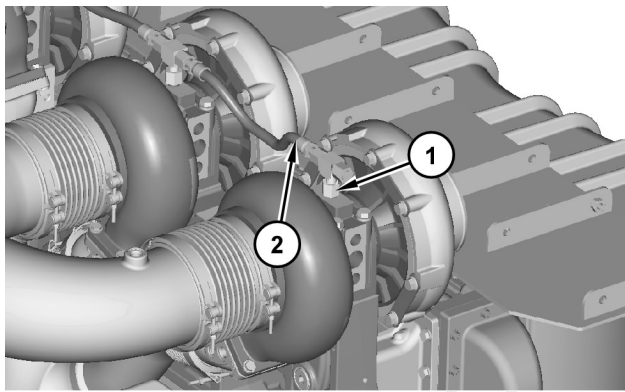


Illustration 66 g01205439

1. Disconnect fitting (1). Position fitting (1) and hose assembly (2) out of the way.

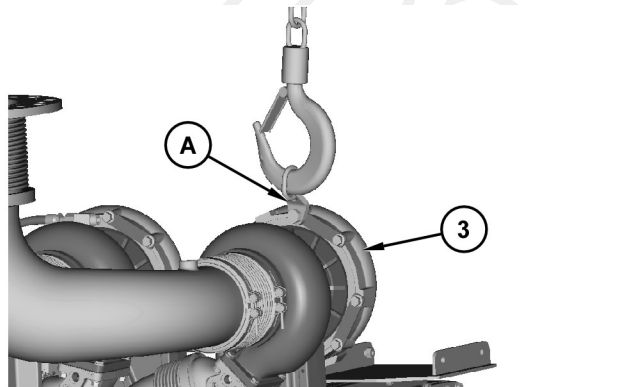


Illustration 67 g01205440

2. Attach Tooling (A) and a suitable lifting device onto turbocharger (3). The weight of turbocharger (3) is approximately 59 kg (130 lb).

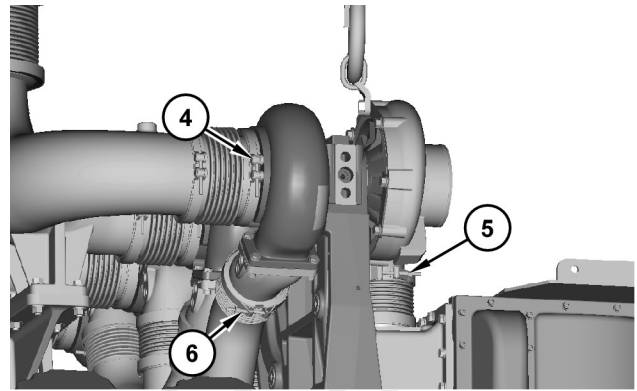


Illustration 68 g01205442

3. Disconnect clamps (4), (5), and (6).

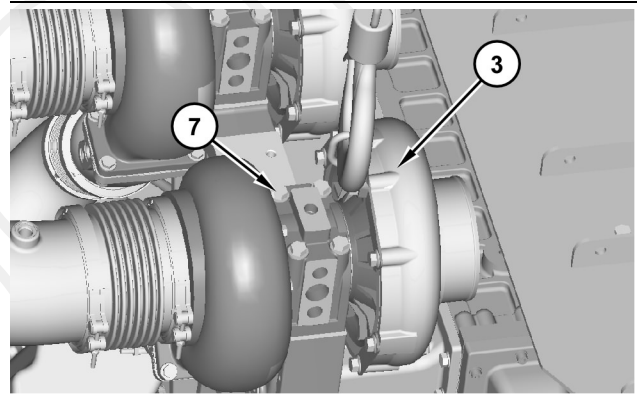


Illustration 69 g01205441

4. Remove bolts (7). Remove turbocharger (3).
5. Repeat Steps 1 through 4 for the remaining turbochargers.

i02411960

Turbocharger - Install

SMCS Code: 1052-012

Installation Procedure

Table 7

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7573	Link Bracket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

i02421955

Water Temperature Control Valve - Install

SMCS Code: 1355-012

Installation Procedure

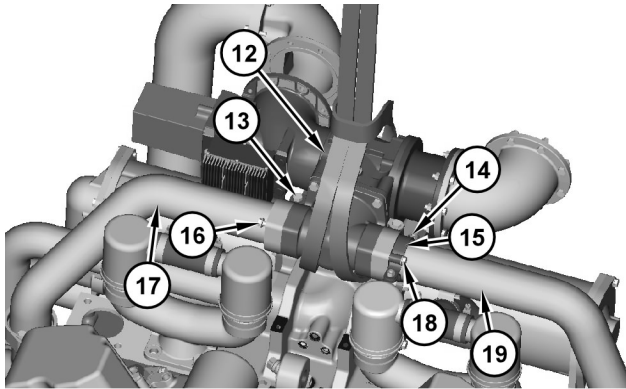


Illustration 112

g01200964

1. Attach a suitable lifting device onto water temperature control valve (12). The weight of water temperature control valve (12) is approximately 73 kg (160 lb). Position water temperature control valve (12). Install bolts (13). Position tube assembly (19). Install bolts (18). Slide clamp (15) into position and tighten nuts (14). Position tube assembly (17). Install bolts (16).

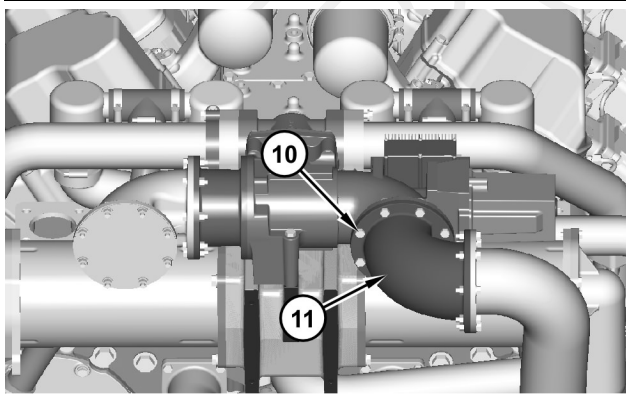


Illustration 113

g01200797

2. Position tube assembly (11). Install bolts (10).

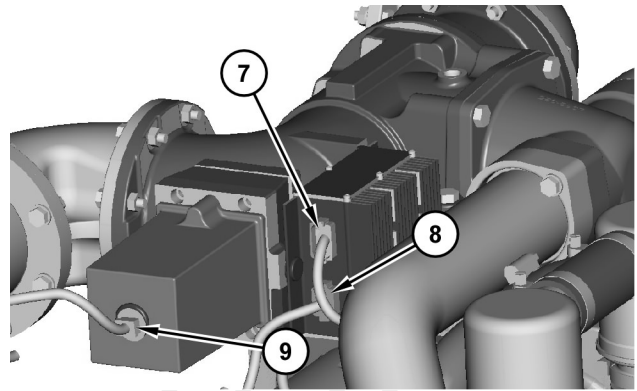


Illustration 114

g01200953

3. Connect harness assemblies (7), (8), and (9).

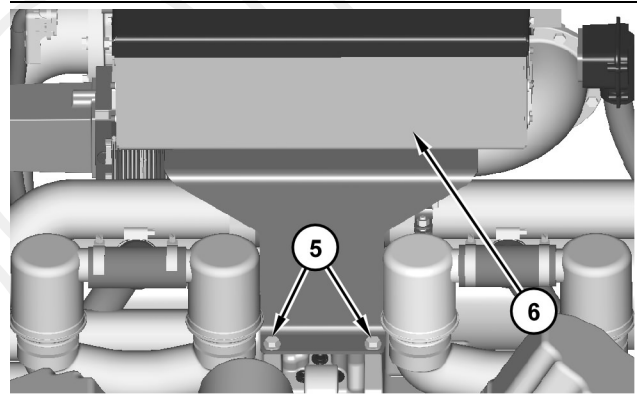


Illustration 115

g01209826

4. Position box (6). Install bolts (5).

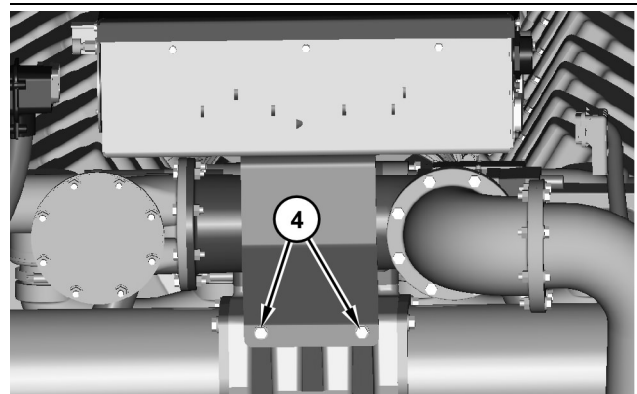


Illustration 116

g01209825

5. Install bolts (4).

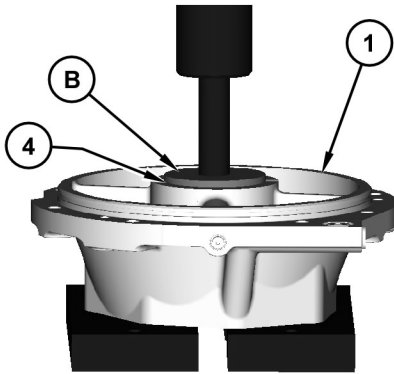


Illustration 153

g01213693

5. Use Tooling (B) and a suitable press in order to install bearing (4) into housing (1).

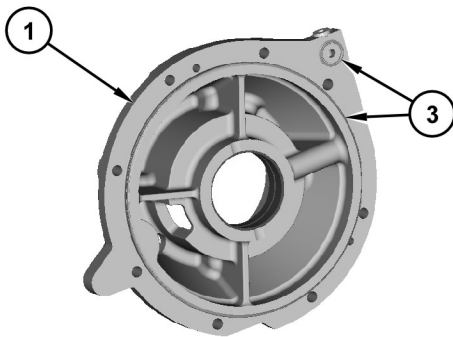


Illustration 154

g01213648

Note: Check the O-ring seals for wear or for damage. If necessary, replace the O-ring seals.

6. Install O-ring seals (3) into housing (1).

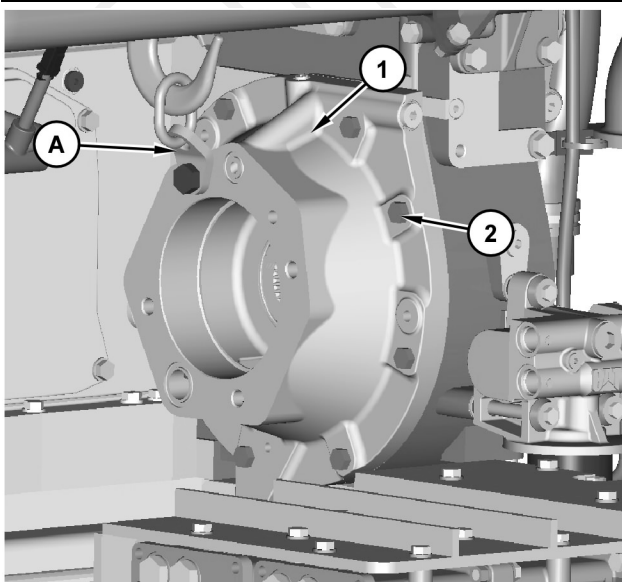


Illustration 155

g01213642

7. Attach Tooling (A) and a suitable lifting device onto housing (1). The weight of housing (1) is approximately 23 kg (50 lb). Position housing (1). Install bolts (2).

End By:

- Install the auxiliary water pump. Refer to Disassembly and Assembly, "Auxiliary Water Pump - Install".
- Install the fuel pump. Refer to Disassembly and Assembly, "Fuel Pump (Manifold) - Remove and Install".

i02412405

Auxiliary Water Pump - Remove

SMCS Code: 1371-011

Removal Procedure

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

- Drain the coolant from the cooling system into a suitable container for storage or for disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change".

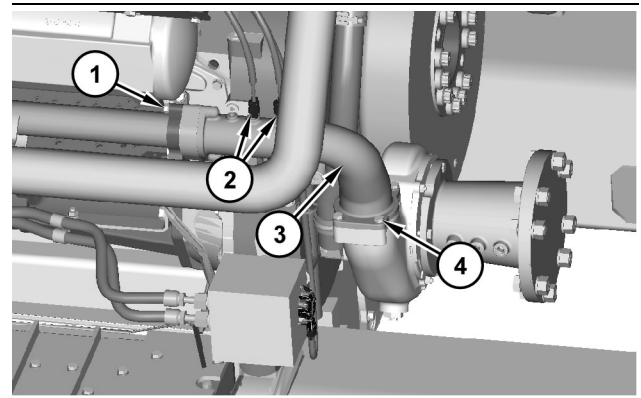


Illustration 156

g01205788

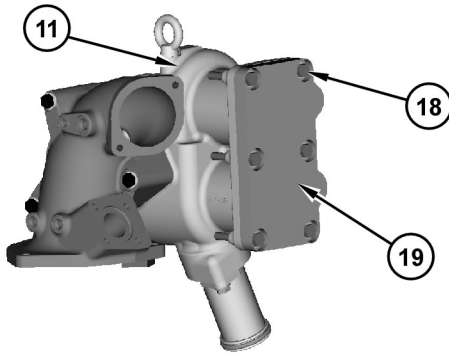


Illustration 198

g01287402

⚠ WARNING

Personal injury can result from parts and/or covers under spring pressure.

Spring force will be released when covers are removed.

Be prepared to hold spring loaded covers as the bolts are loosened.

7. Remove bolts (18). Remove cover (19) from regulator assembly (11).

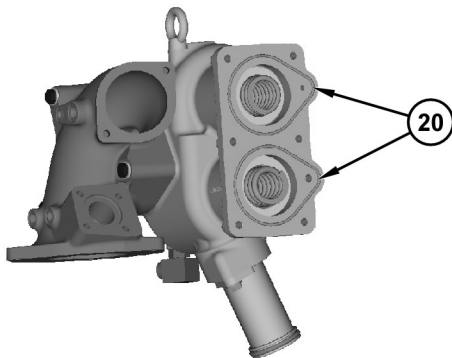


Illustration 199

g01287404

8. Remove O-ring seals (20).

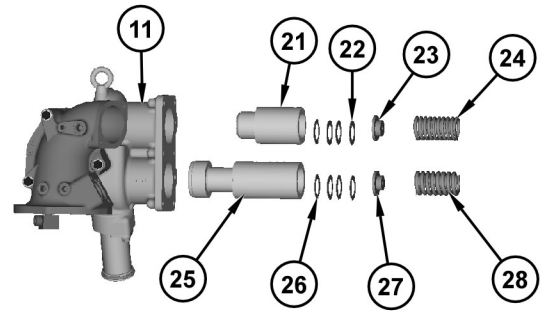


Illustration 200

g01287406

9. Remove spring (24), retainer (23), shims (22), and stem (21) for the maximum pressure relief valve from regulator assembly (11). Remove spring (28), retainer (27), shims (26), and stem (25) for the regulator valve from regulator assembly (11).

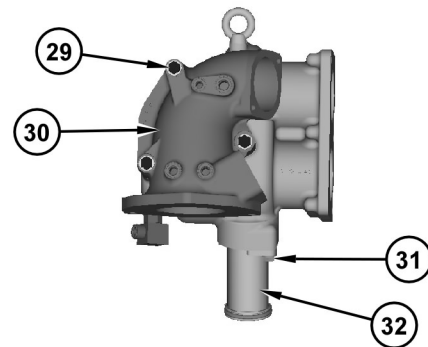


Illustration 201

g01287407

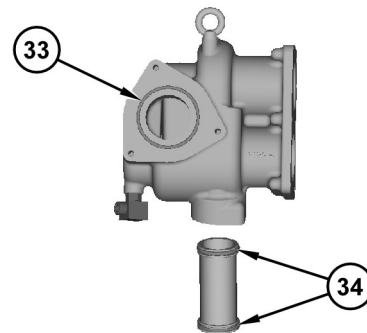


Illustration 202

g01287417

10. Remove bolts (29). Remove housing (30). Remove bolts (31). Remove tube (32). Remove O-ring seal (33). Remove O-ring seals (34).

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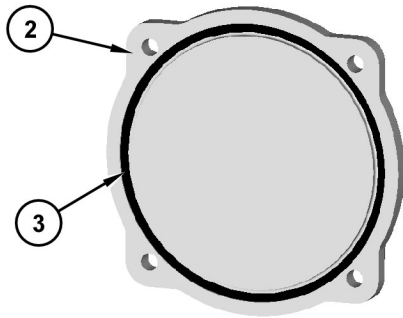


Illustration 243

g01201320

3. Remove O-ring seal (3) from cover (2).

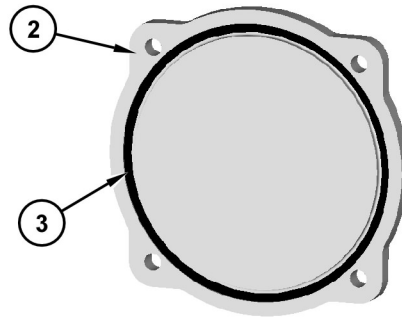


Illustration 246

g01201320

Note: Check the O-ring seal for wear or for damage. If necessary, replace the O-ring seal.

2. Install O-ring seal (3) onto cover (2).

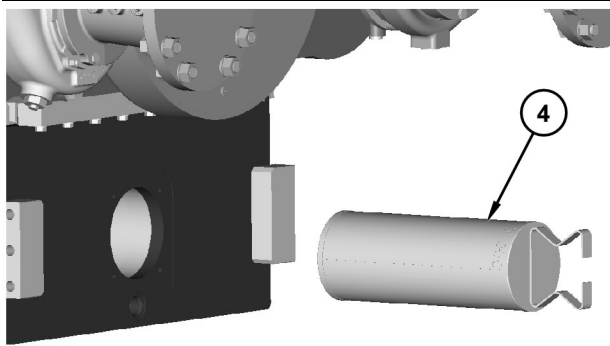


Illustration 244

g01201321

4. Remove oil screen (4).

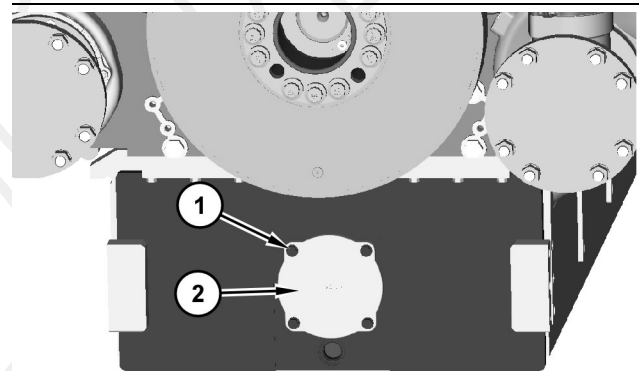


Illustration 247

g01201319

3. Position cover (2). Install bolts (1).

4. Fill the engine with oil. Refer to Operation and Maintenance Manual, "Engine Oil and Filter - Change".

Installation Procedure

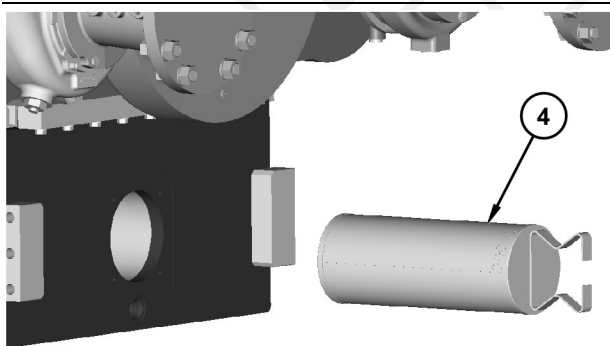


Illustration 245

g01201321

1. Install oil screen (4).

i02430901

Engine Oil Pan - Remove

SMCS Code: 1302-011

Removal Procedure

Table 24

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7498	Support Stand As	4
	1U-7501	Extension Tube	4
B	138-7573	Link Bracket	3

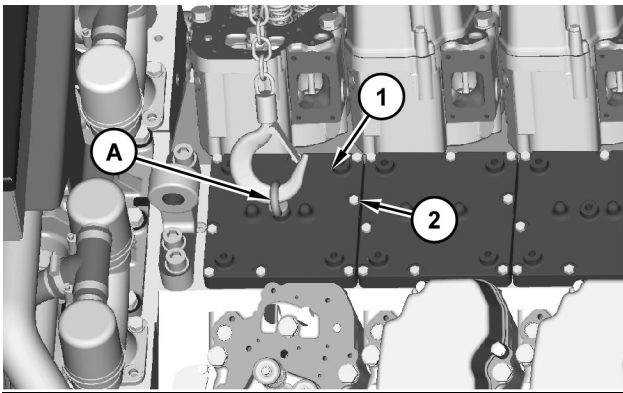


Illustration 288

g01203661

1. Attach Tooling (A) and a suitable lifting device onto valve lifter (1). Remove bolts (2). Remove valve lifter (1).

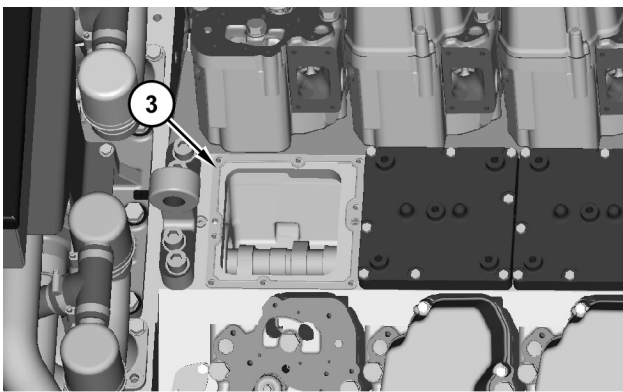


Illustration 289

g01204525

2. Remove integral seal (3).
3. Repeat Steps 1 and 2 for the remaining valve lifters.

i02410099

Valve Lifter - Disassemble

SMCS Code: 1209-015

Disassembly Procedure

Start By:

- a. Remove the valve lifter. Refer to Disassembly and Assembly, "Valve Lifter - Remove".

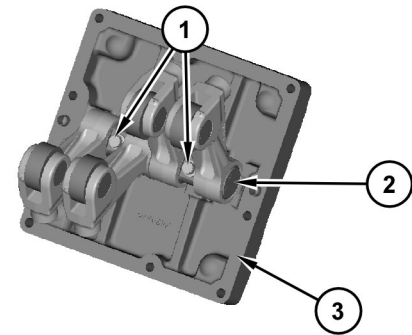


Illustration 290

g01204408

1. Remove bolts (1). Remove shaft assembly (2) from housing (3).

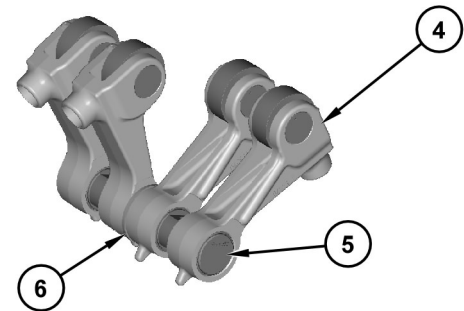


Illustration 291

g01204412

2. Remove levers (4) from shaft (5). Remove thrust washer (6) from shaft (5).

i02410168

Valve Lifter - Assemble

SMCS Code: 1209-016

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

⚠ WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

1. Install Tooling (A) into the hole for the electronic unit injector. Refer to Illustration 324.

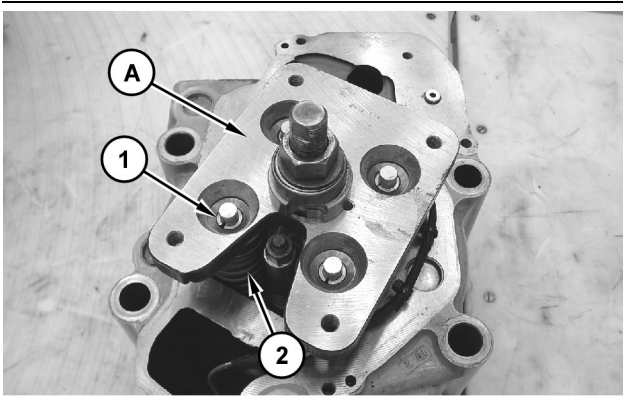


Illustration 325

g01207171

2. Install the plate of Tooling (A) onto the valve springs. Refer to Illustration 325. Install the nut onto the stud. Tighten the nut in order to compress valve springs (2). Remove retainer locks (1).

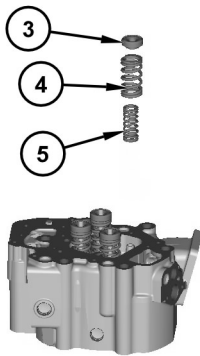


Illustration 326

g01298522

3. Remove Tooling (A). Remove rotocoil (3), outer spring (4), and inner spring (5).
4. Repeat Steps 1 through 3 for the remaining valve springs.

Installation Procedure

Table 37

Required Tools			
Tool	Part Number	Part Description	Qty
A	283-9697	Valve Spring Compressor and Injector Sleeve Kit	1

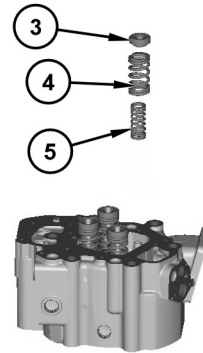


Illustration 327

g01298522

⚠ WARNING

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

1. Install inner spring (5), outer spring (4), and rotocoil (3).

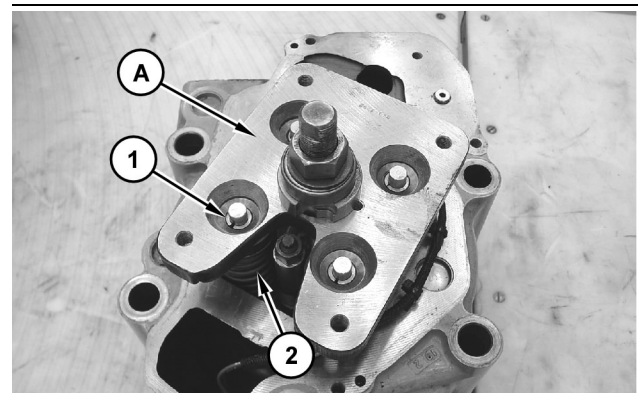


Illustration 328

g01207171

2. Use Tooling (A) in order to compress valve springs (2). Install retainer locks (1). Release the tension on valve springs (2). Remove Tooling (A).
3. Repeat Steps 1 through 2 for the remaining valve springs.

Installation Procedure

Table 49

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Bolt M24 by 500 mm	2

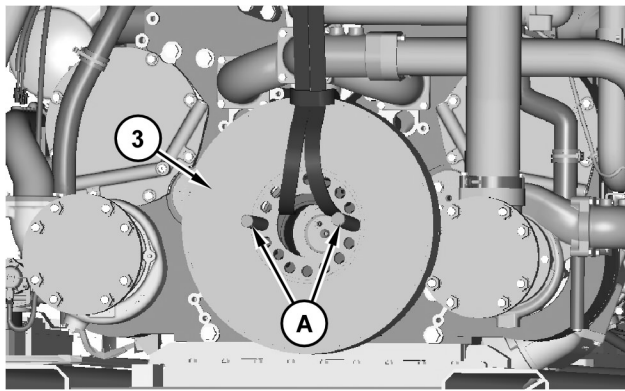


Illustration 361

g01204854

1. Attach a suitable lifting device onto vibration damper (3). The weight of vibration damper (3) is approximately 195 kg (430 lb). Install Tooling (A). Position vibration damper (3) onto Tooling (A). Slide vibration damper (3) on Tooling (A). Remove the suitable lifting device.

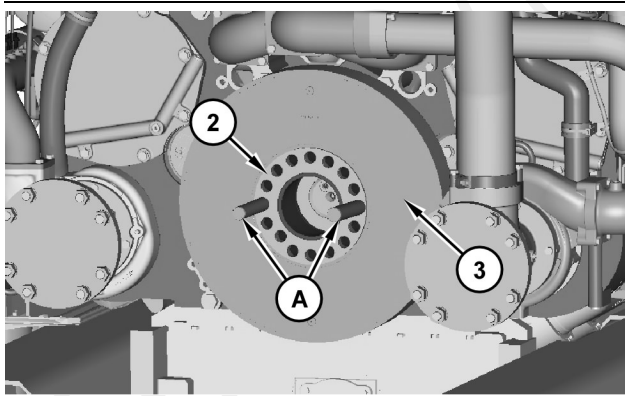


Illustration 362

g01204850

2. Position vibration damper (3). Install spacer (2) onto Tooling (A).

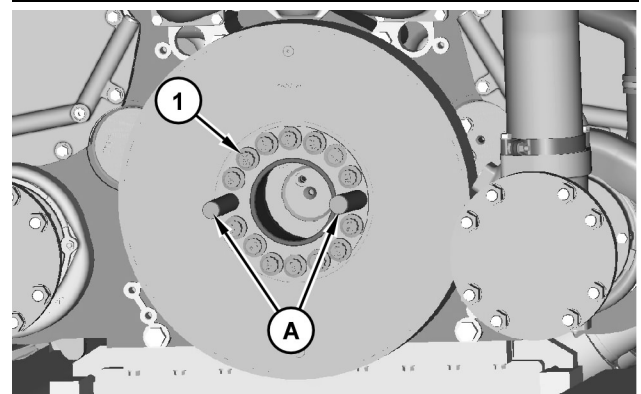


Illustration 363

g01204846

3. Install bolts (1). Remove Tooling (A).

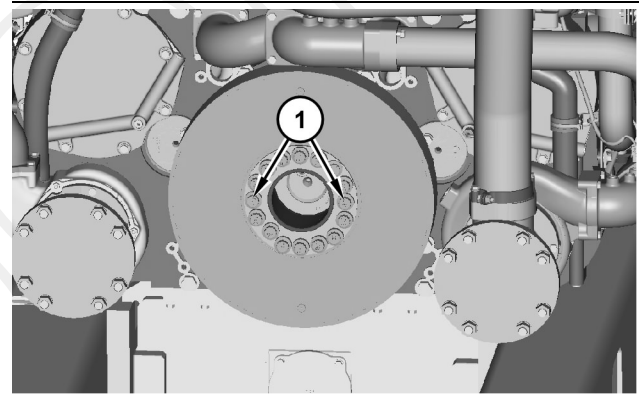


Illustration 364

g01204842

4. Install remaining bolts (1). Tighten bolts (1) to a torque of 625 ± 50 N·m (461 ± 37 lb ft).

i02416922

Crankshaft Front Seal - Remove

SMCS Code: 1160-011

Removal Procedure

Table 50

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-5593	Drill Bit	1
B	1U-7600	Slide Hammer Puller Gp	1

Start By:

- a. Remove the vibration damper. Refer to Disassembly and Assembly, "Vibration Damper - Remove and Install".

Installation Procedure

Table 59

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-0520	Driver Gp	1

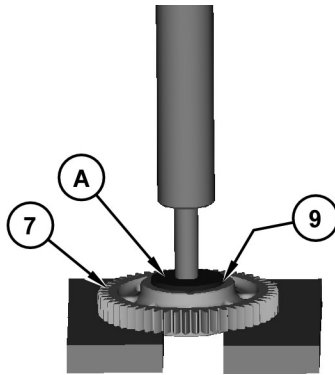


Illustration 403

g01229253

1. Use Tooling (A) and a suitable press in order to install bearing (9) into gear (7).

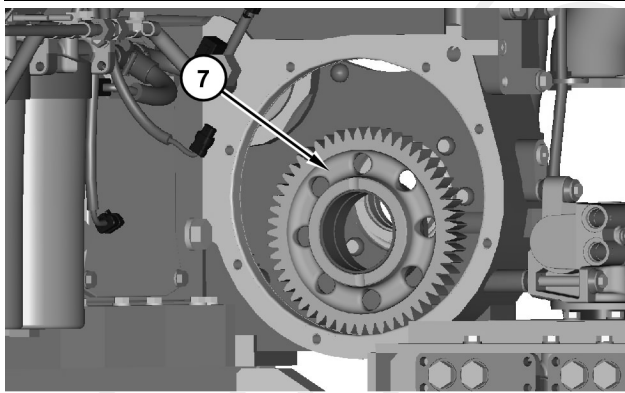


Illustration 404

g01229252

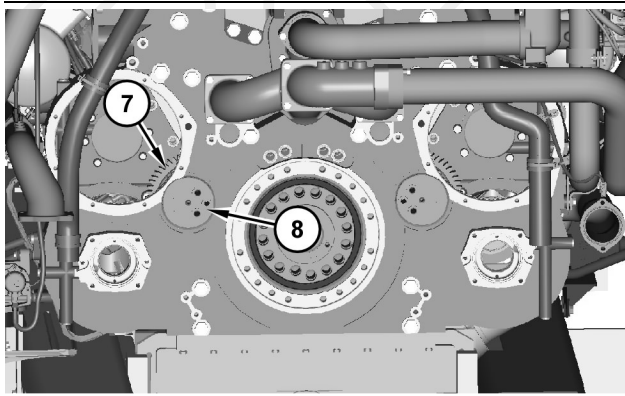


Illustration 405

g01229251

2. Position idler gear (7) into the back side of the front drive housing. Raise idler gear (7) from the bottom of the front drive housing into position. Install a new O-ring seal onto pin (8). Install pin (8) into idler gear (7).

3. Repeat Steps 1 through 2 for the opposite side.

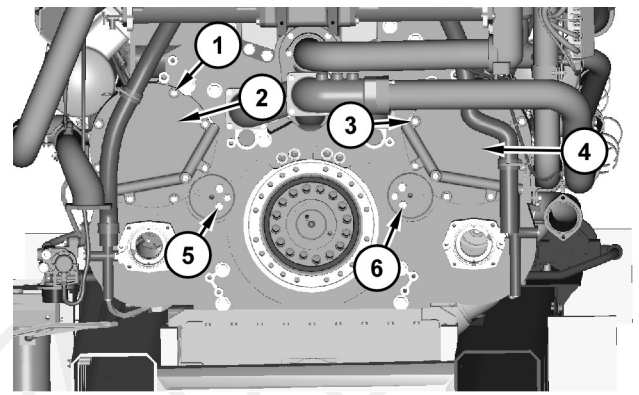


Illustration 406

g01229249

4. Install bolts (6). Install bolts (5). Install cover (4). Install bolts (3). Install cover (2). Install bolts (1).

End By:

- a. Install the vibration damper. Refer to Disassembly and Assembly, "Vibration Damper - Remove and Install".
- b. Install the fuel and auxiliary water pump drive. Refer to Disassembly and Assembly, "Fuel and Auxiliary Water Pump Drive - Install".
- c. Install the engine oil and water pump drive. Refer to Disassembly and Assembly, "Engine Oil and Water Pump Drive - Install".

i02421071

Gear Group (Rear) - Remove

SMCS Code: 1206-011; 1212-011

Removal Procedure

Start By:

- a. Remove the flywheel housing. Refer to Disassembly and Assembly, "Flywheel Housing - Remove".

- e. Install the starting motors. Refer to Disassembly and Assembly, "Electric Starting Motor - Install" or Disassembly and Assembly, "Air Starting Motor - Install".

i02414616

Pistons, Liners, and Connecting Rods - Remove

SMCS Code: 1216-011; 1225-011

Removal Procedure

Table 66

Required Tools			
Tool	Part Number	Part Description	Qty
A	275 - 7905	Engine Turning Tool	1
B	274 - 5875	Guide	2
	276 - 0010	Bolt	2
C	277 - 3569	Puller Group	1
D	288 - 9171	Bridge	1
E	138 - 7574	Link Bracket	1

Start By:

- a. Remove the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Drain the engine oil into a suitable container for storage or for disposal. Refer to Operation and Maintenance Manual, "Engine Oil and Filter - Change".

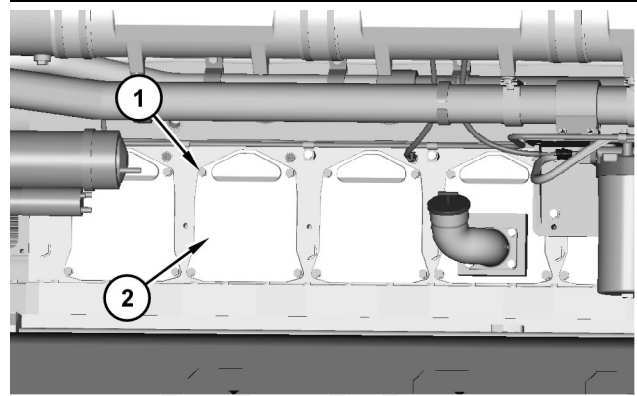


Illustration 439

g01206105

2. Remove bolts (1). Remove side cover (2).
3. Use Tooling (A) to rotate the flywheel in order to access the connecting rod cap that will be removed.

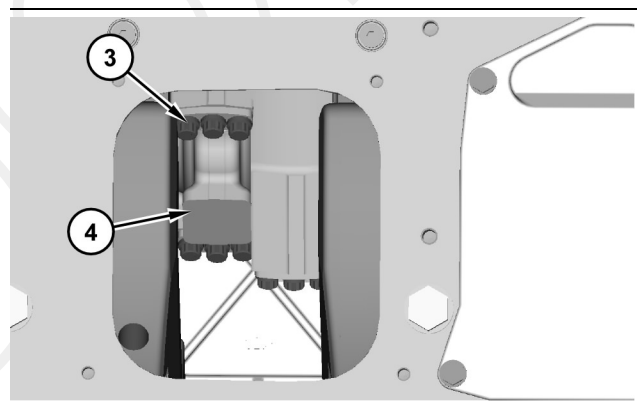


Illustration 440

g01227062

Note: Inspect the connecting rod and connecting rod cap for the proper identification mark. The connecting rod and the connecting rod cap should have an etched number on the side. The number should match the cylinder number. Mark the connecting rod and the connecting rod cap, if necessary. Careful handling is required for fractured connecting rods. The connecting rod and the rod cap should be placed on the sides in order to prevent damage. When possible, the connecting rod and the rod cap should be bolted together in order to prevent damage.

4. Remove bolts (3) and connecting rod cap (4). Position the crankshaft so that the piston is at the bottom dead center. Inspect the connecting rod bearing for wear or for damage. If necessary, replace the connecting rod bearing. Refer to Disassembly and Assembly, "Connecting Rod Bearings - Remove and Install" for the proper procedure.

Hydraulic Procedure

Table 74

Required Tools			
Tool	Part Number	Part Description	Qty
A	125 - 2739	Bearing Pilot	1
	125 - 2740	Back Up Plate	1
	125 - 2741	Bearing Sleeve	1
B	6V - 4013	Screw	1
	6V - 4010	Puller Plate	1
	8M - 8778	Taperlock Stud	1
	2J - 3506	Full Nut	1
	5P - 8248	Hard Washer	1
C	5P - 5247	Hydraulic Puller	1
	3S - 6224	Electric Hydraulic Pump Gp	1
	8S - 8292	Extension	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

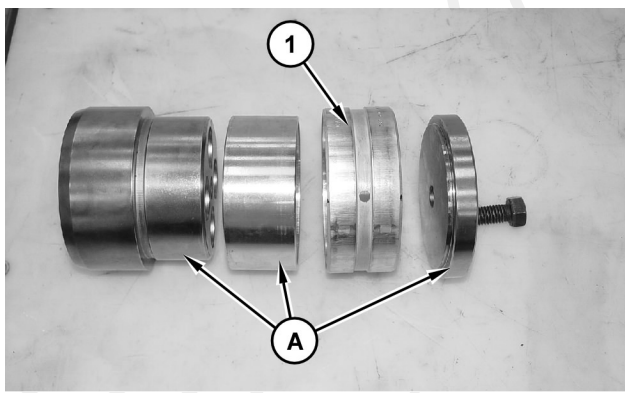


Illustration 477

g01203522

1. Install camshaft bearing (1) onto Tooling (A).

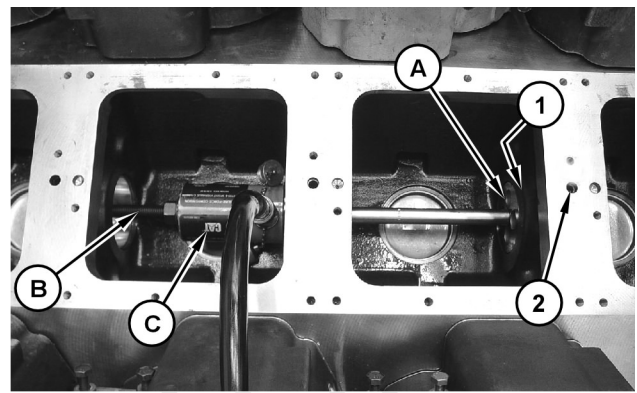


Illustration 478

g01203527

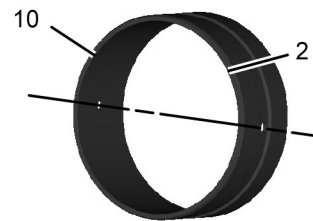


Illustration 479

g01204034

Note: The camshaft bearing joint must be in the 2 O'clock or the 10 O'clock position. The oil hole must be located on the centerline of the bore.

2. Position Tooling (A) and camshaft bearing (1) into the bearing bore. Make sure that the groove in the back of camshaft bearing (1) is aligned with oil hole (2) in the cylinder block. Install Tooling (B) and Tooling (C). Install camshaft bearing (1).

End By:

- a. Install the camshaft. Refer to Disassembly and Assembly, "Camshaft - Install".

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