Product: INDUSTRIAL ENGINE
Model: C7.1 INDUSTRIAL ENGINE 881
Configuration: C7.1 Industrial Engine 88100001-UP

Disassembly and Assembly

C7.1 Industrial Engine

Media Number -UENR0667-01 **Publication Date -01/10/2013** **Date Updated -08/09/2017**

i06649493

Flywheel Housing - Remove and Install

SMCS - 1157-010

Removal Procedure of Type D Wet Back-End Housing

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Studs M10 by 100 mm	2

Start By:

a. Remove the flywheel. Refer to Disassembly and Assembly, "Flywheel - Remove" for the correct procedure.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: The wet back-end flywheel housing may be installed on standard engines. When installing a wet back-end flywheel housing, to a standard engine a seal will not be installed to the flywheel housing.

1. There are five types of flywheel housing that can be installed on the engine. The removal procedures for all types of flywheel housing are similar but all the installation procedures are different.

Ensure that you use the correct procedure and the correct grades of bolts for your application.

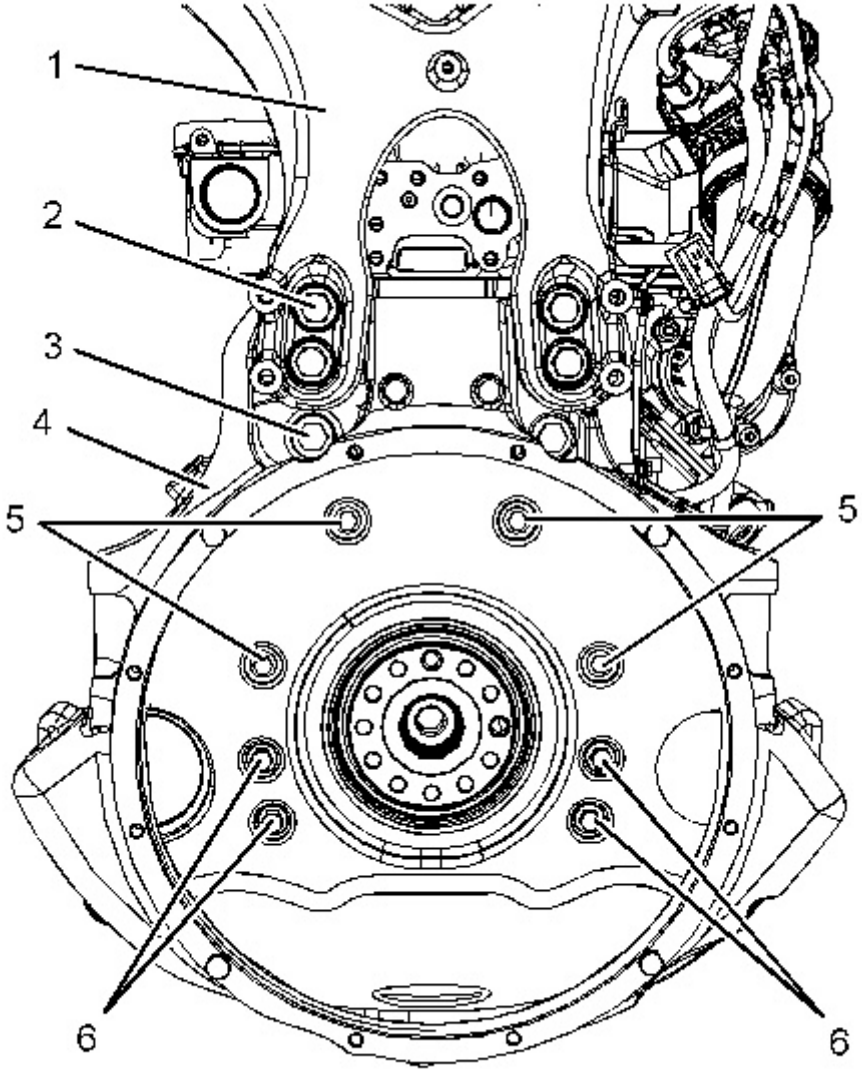

Illustration 1 g03739858

Type D Wet Back-End Housing

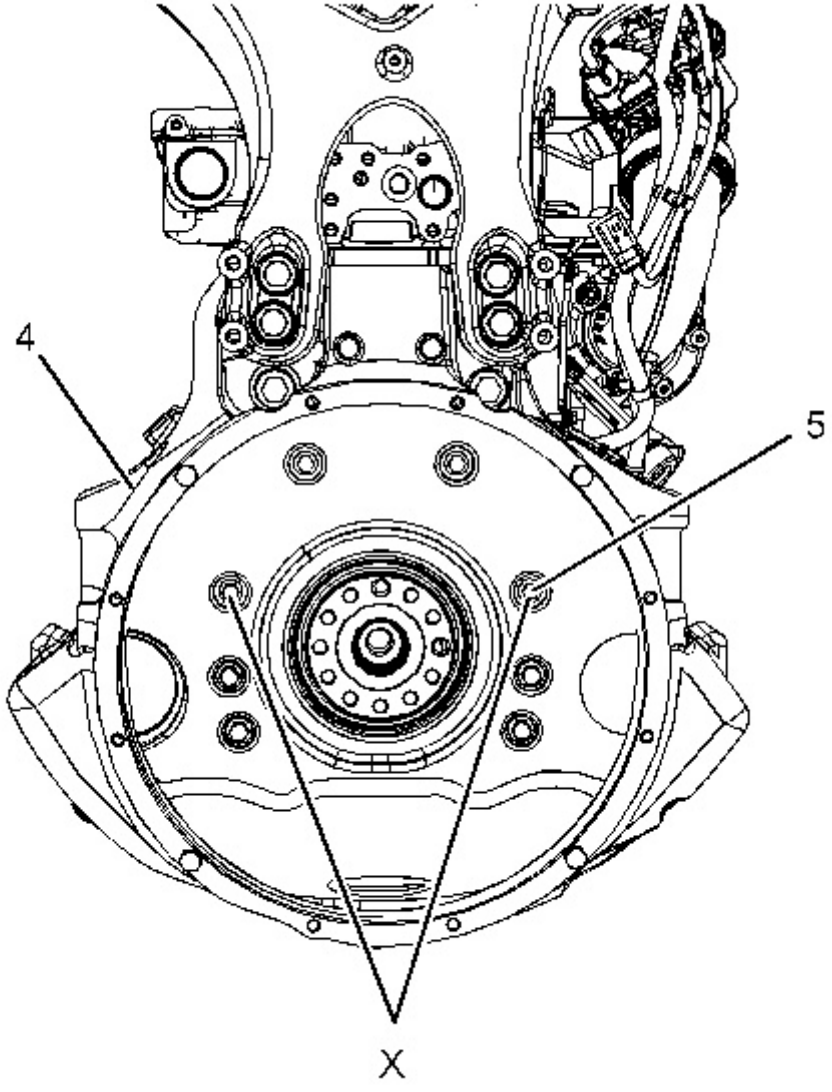

Illustration 2 g03743084

Type D Wet Back-End Housing

2. Remove bolts (2) from bracket (1). Remove the bracket from flywheel housing (4). Refer to Disassembly and Assembly, "Support and Mounting (CEM) - Remove and Install" for the correct procedure.
3. Remove bolts (5) from Positions (X) in flywheel housing (4).
4. Install Tooling (A) into Positions (X) to flywheel housing (4).
5. Install a suitable lifting device onto flywheel housing (4) to support the flywheel housing. The weight of the flywheel housing is approximately 40 kg (88 lb).
6. Remove remaining bolts (5) from flywheel housing (4).
7. Remove bolts (3) and bolts (6) from flywheel housing (4).
8. Use the lifting device to remove flywheel housing (4) from the cylinder block.

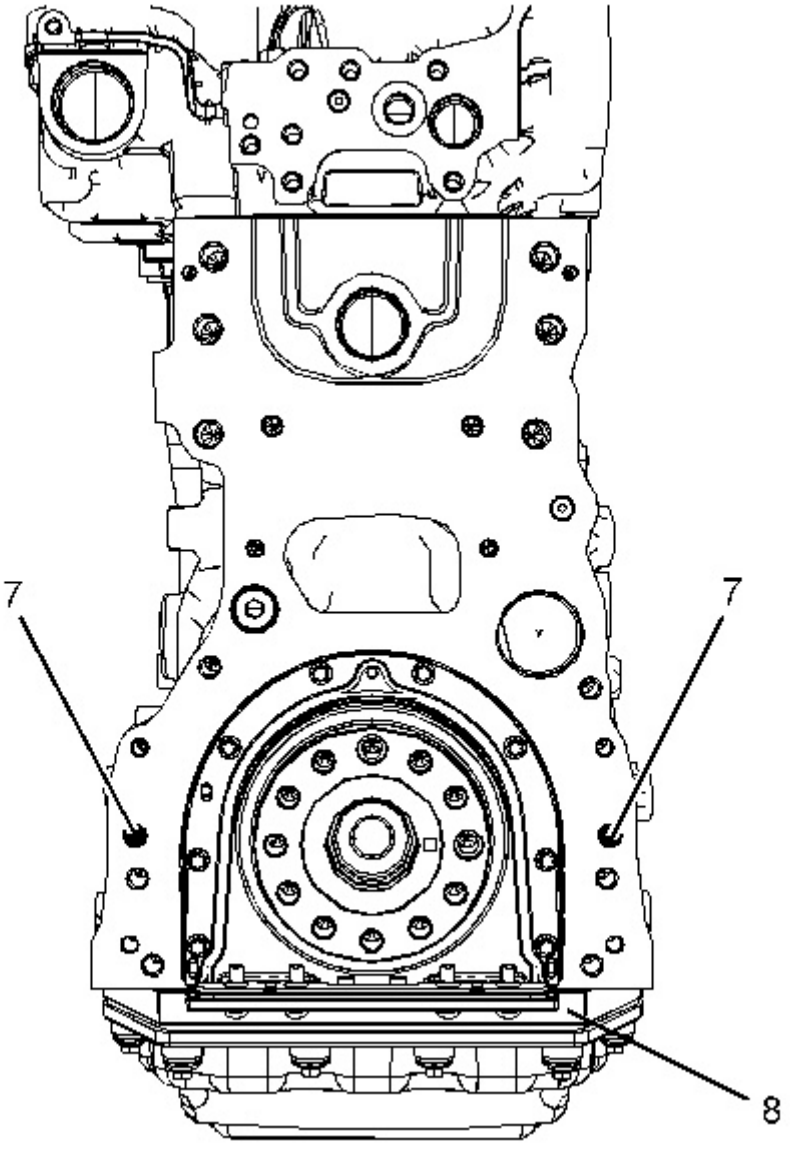

Illustration 3 g03743093

Typical example

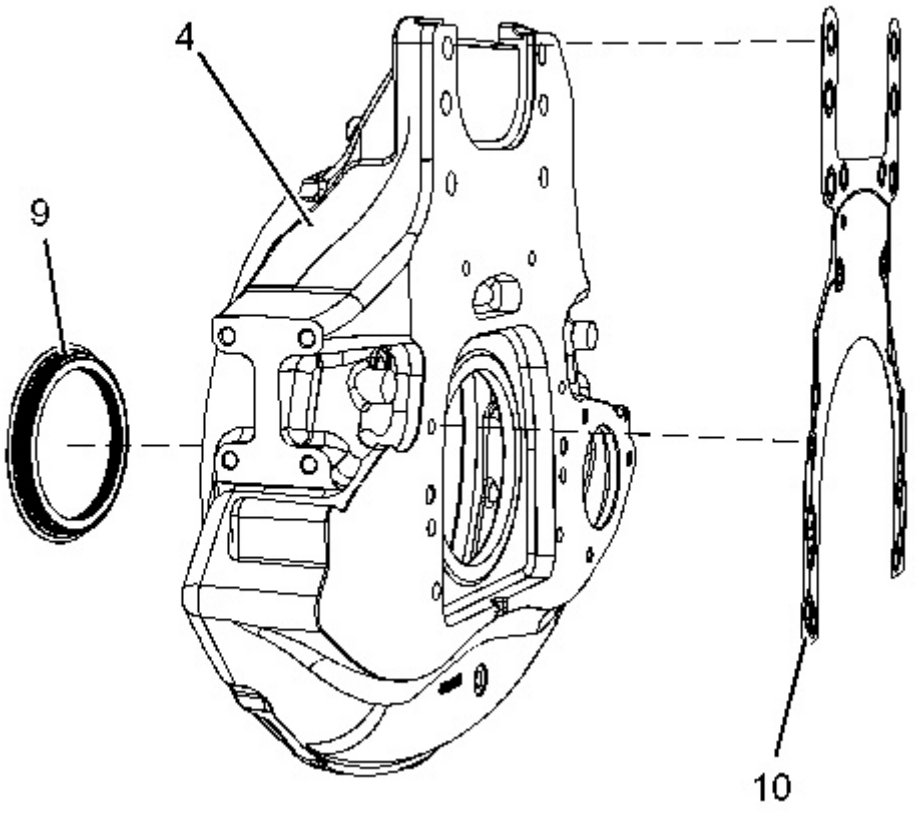

Illustration 4 g03743094

Typical example

9. Remove dust seal (8).
10. If equipped, remove gasket (10).
11. If necessary, remove dowels (7) from the cylinder block.
12. If equipped, remove oil seal (9) from flywheel housing (4).

Installation Procedure of Type D Wet Back-End Housing

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Studs M10 by 100 mm	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that the flywheel housing is clean and free from damage. If necessary, replace the flywheel housing.

   Ensure that the crankshaft palm is free from oil and grease.

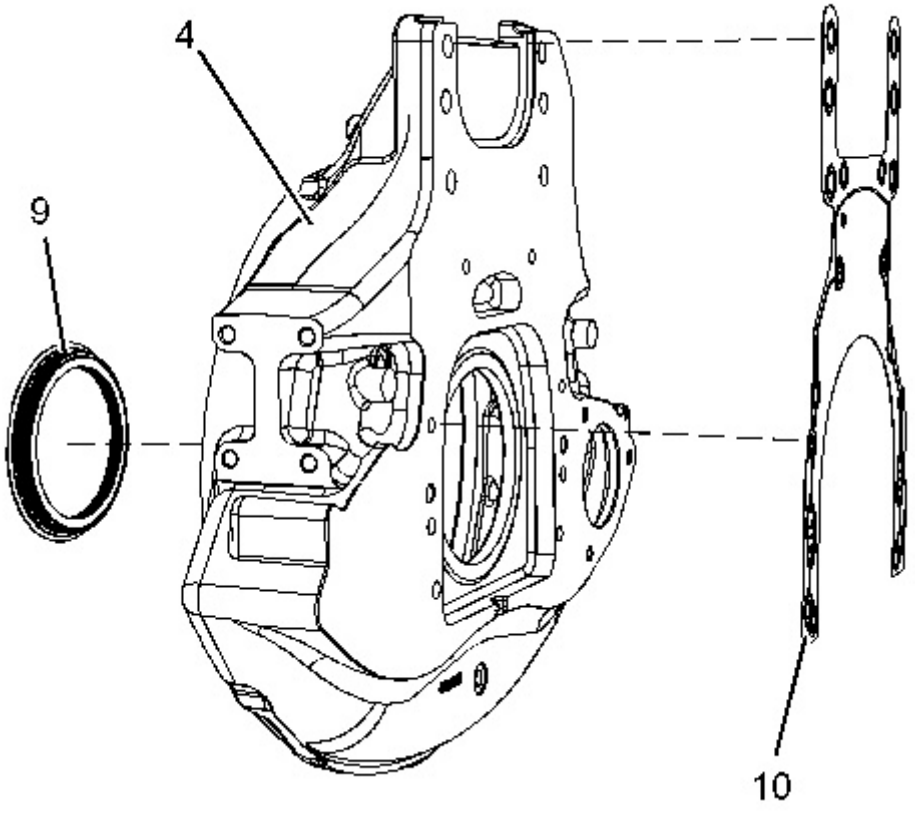

Illustration 5 g03743094

Typical example

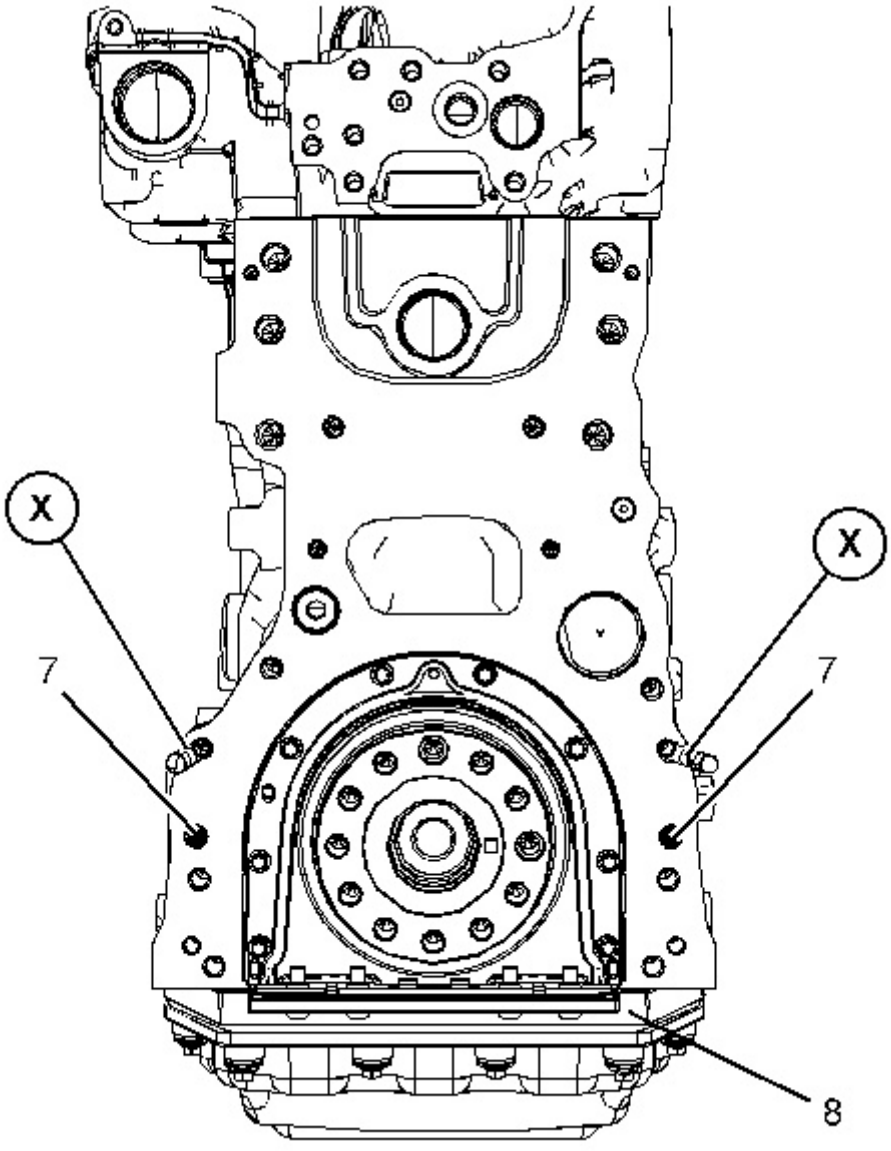

Illustration 6 g06059332

Typical example

2. If necessary, install a new oil seal (9) to flywheel housing (4).

   Note: Press the oil seal into the flywheel housing from the rear. Ensure that the front edge of the oil seal is flush with the gasket surface of the flywheel housing.

3. Inspect the crankshaft rear seal for leaks. If there are any oil leaks, replace the crankshaft rear seal. Refer to Disassembly and Assembly, "Crankshaft Rear Seal - Remove" and refer to Disassembly and Assembly, "Crankshaft Rear Seal - Install" for the correct procedure.

4. Clean the rear face of the cylinder block. If necessary, install dowels (7) to the cylinder block.

5. Install Tooling (A) to the cylinder block.

6. If necessary, align a new gasket (10) with Tooling (A). Install the gasket to the cylinder block.

7. Install new dust seal (8).

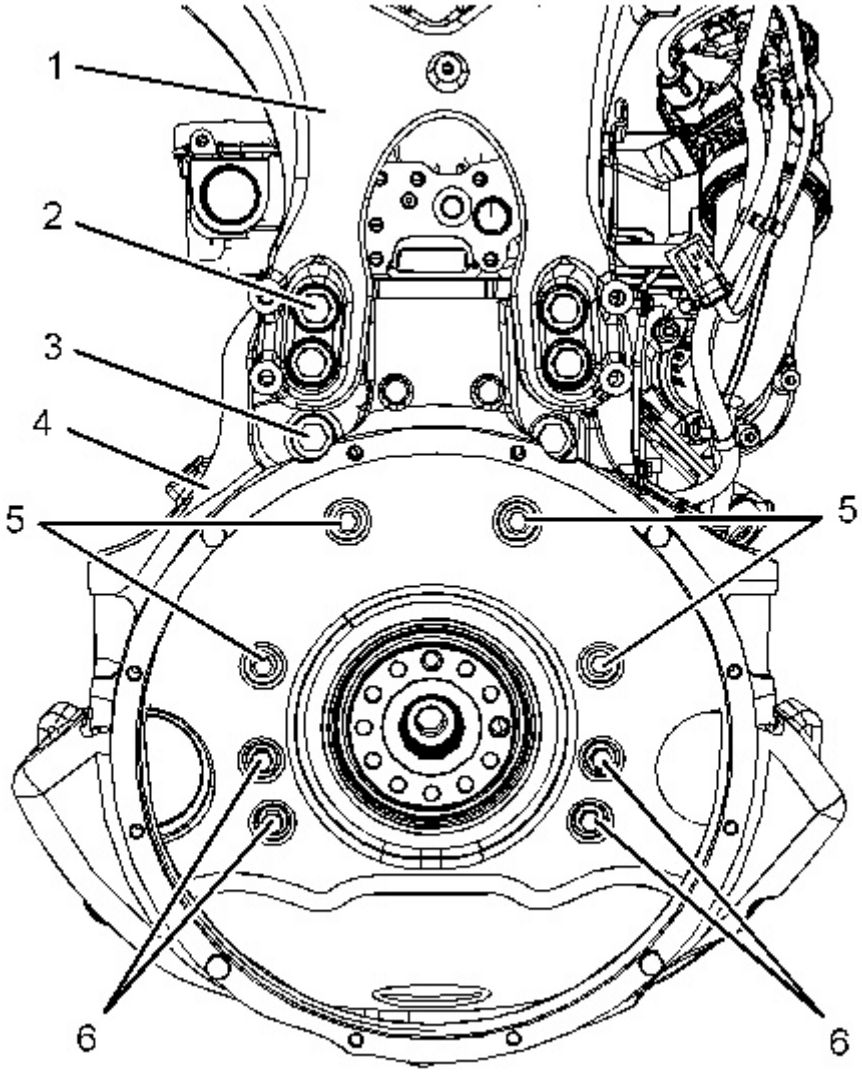

Illustration 7 g03739858

Type D Wet Back-End Housing
Bolts (3) are 16 mm
Bolts (5) are 10 mm
Bolts (6) are 12 mm

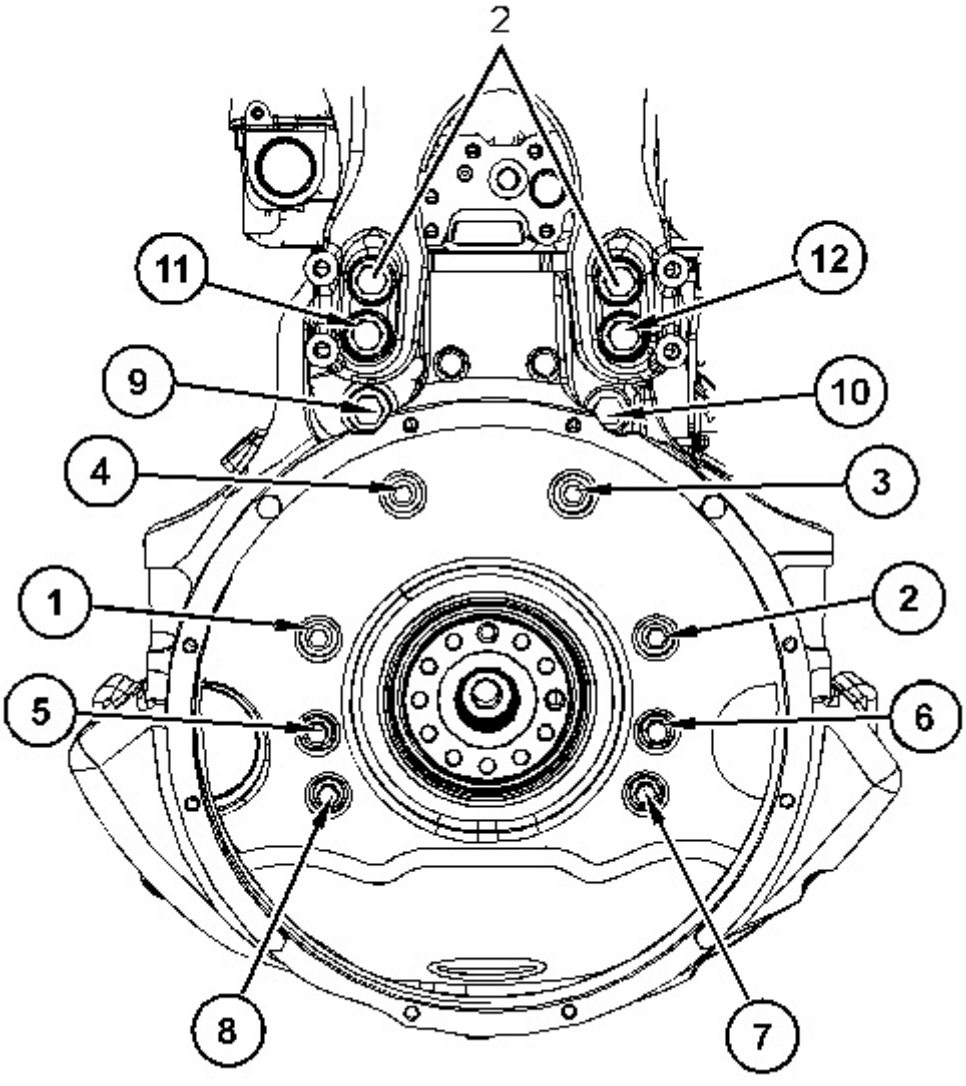

Illustration 8 g03743518

Tightening sequence of Type D flywheel housing

8. **Ensure that bolts (2), bolts (3), bolts (5), and bolts (6) are clean and free from oil or grease. Ensure that all threaded holes in the cylinder block are clean and free from oil or grease.**

   The threads of the bolts and the threads in the cylinder block must be clean and dry to prevent too higher torque being applied.

9. Install a suitable lifting device onto the flywheel housing. The weight of the flywheel housing is approximately 40 kg (88 lb).

10. Use the lifting device to align flywheel housing (4) with Tooling (A). Install the flywheel housing to the cylinder block.

11. Install bracket (1) to flywheel housing (4). Install bolts (2). Refer to Disassembly and Assembly, "Support and Mounting (CEM) - Remove and Install" for the correct procedure.

12. Install bolts (3), bolts (5), and bolts (6).

13. Remove Tooling (A). Install remaining bolts (5).

14. Follow Step 14.a through Step 14.c to tighten bolts (3), bolts (2), bolts (5), and bolts (6) in the tightening sequence that is shown in Illustration 8.

    a. Tighten bolts (5) to a torque of 63 N·m (46 lb ft).

    b. Tighten bolts (3) and bolts (3) to a torque of 260 N·m (192 lb ft).

    c. Tighten bolts (6) to a torque of 115 N·m (85 lb ft).

15. Tighten bolts (2) to a torque of 190 N·m (140 lb ft).

16. Check the alignment of flywheel housing (4) with the crankshaft. Refer to System Operation, Testing and Adjusting, "Flywheel Housing - Inspect" for more information.

End By:

a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install" for the correct procedure.

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Disassembly and Assembly
C7.1 Industrial Engine
Media Number -UENR0667-01 **Publication Date -01/10/2013** **Date Updated -08/09/2017**

i06649496

Flywheel Housing - Remove and Install

SMCS - 1157-010

Removal Procedure of Type E Flywheel Housing

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Studs M10 by 100 mm	2

Start By:

a. Remove the flywheel. Refer to Disassembly and Assembly, "Flywheel - Remove" for the correct procedure.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

---

1. There are five types of flywheel housing that can be installed on the engine. The removal procedures for all types of flywheel housing are similar but all the installation procedures are different.

   Ensure that you use the correct procedure and the correct grades of bolts for your application.

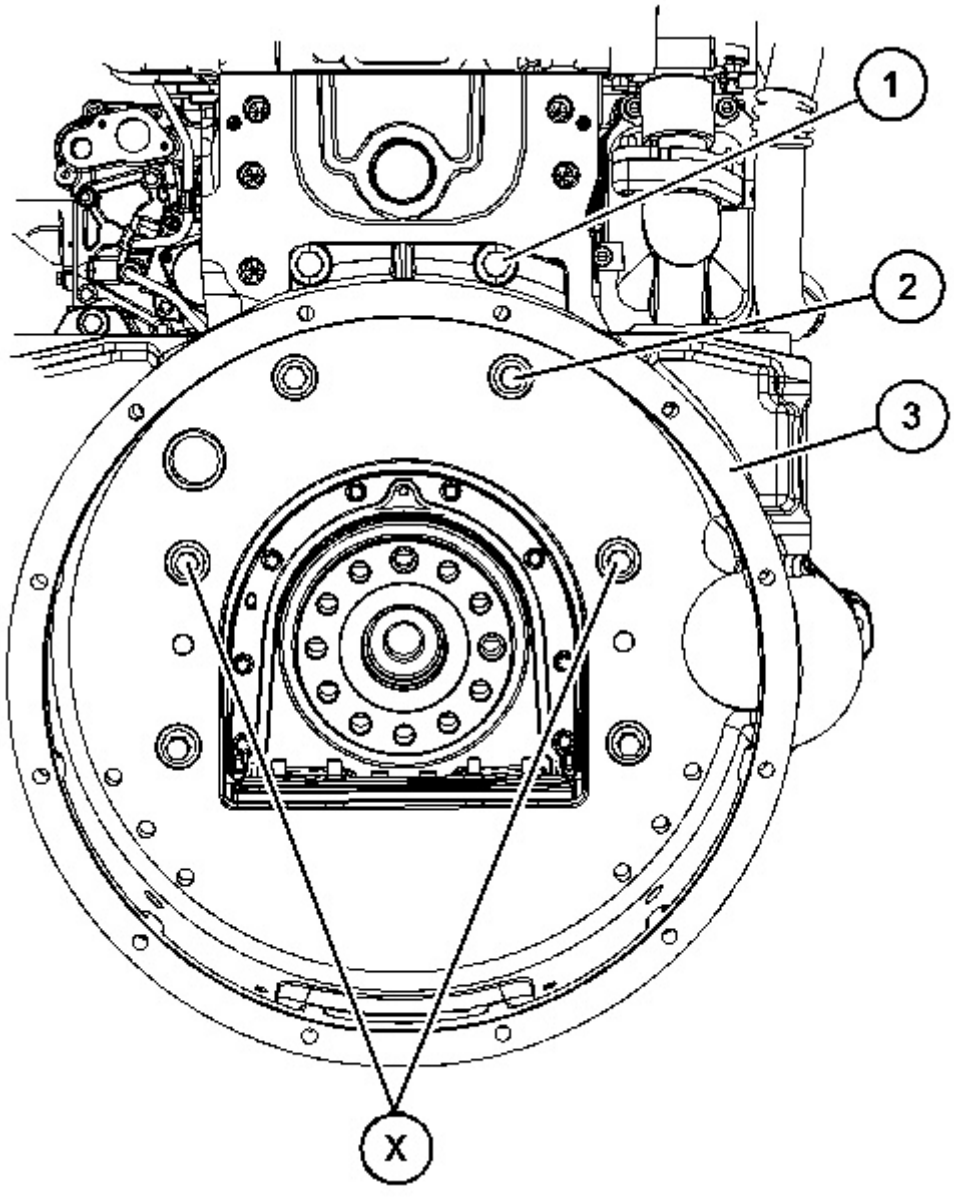

Illustration 1 g06059374

Typical example

2. Remove bolts (2) from Positions (X) in flywheel housing (3).
3. Install Tooling (A) into Position (X) to flywheel housing (3).
4. Install a suitable lifting device onto flywheel housing (3) to support the flywheel housing. The weight of the flywheel housing is approximately 40 kg (88 lb).
5. Remove remaining bolts (2) from flywheel housing (3).
6. Remove bolts (1) from flywheel housing (3).
7. Use the lifting device to remove flywheel housing (3) from the cylinder block.

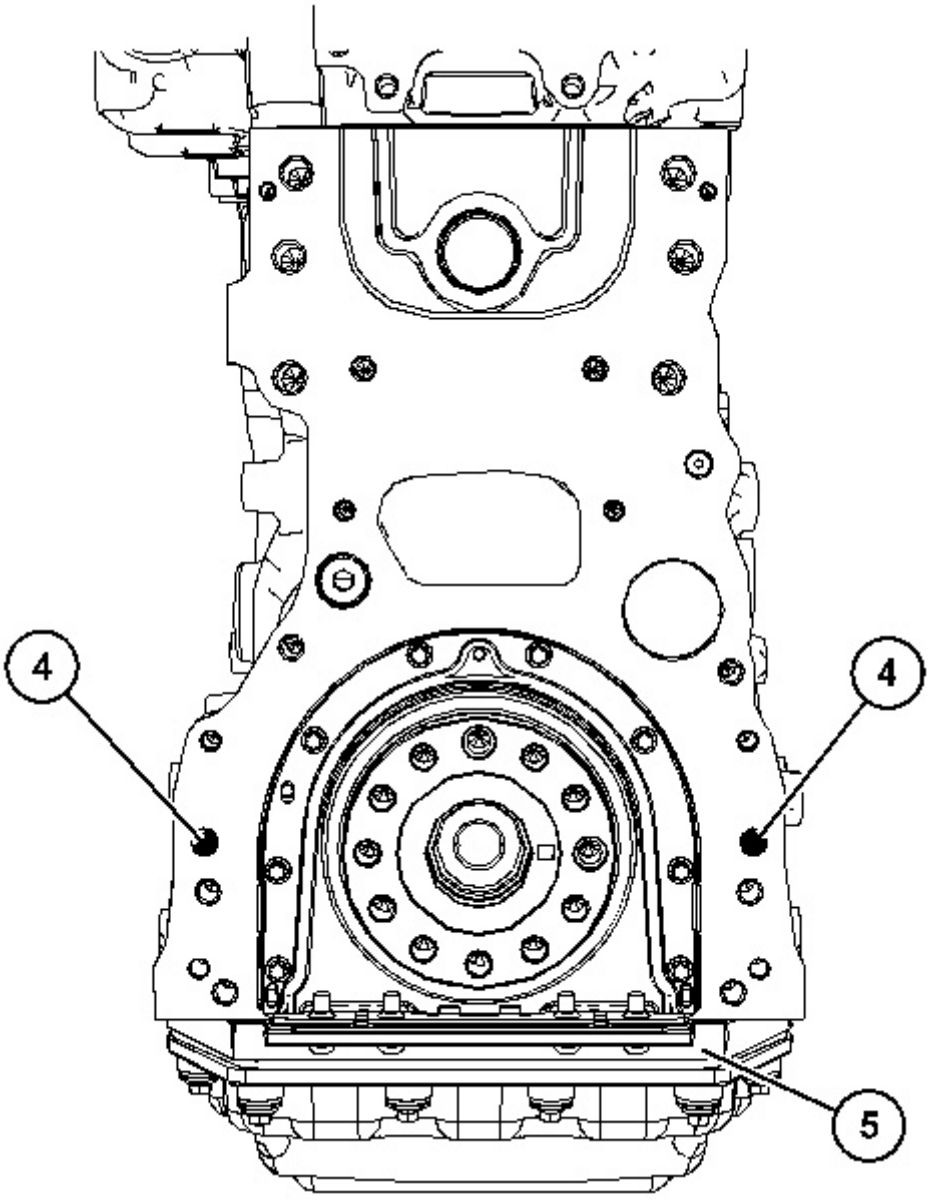

Illustration 2 g06060478

Typical example

8. Remove dust seal (5).
9. If necessary, remove dowels (4) from the cylinder block.

Installation Procedure of Type E Flywheel Housing

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Studs M10 by 100 mm	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

---

1. Ensure that the flywheel housing is clean and free from damage. If necessary, replace the flywheel housing.

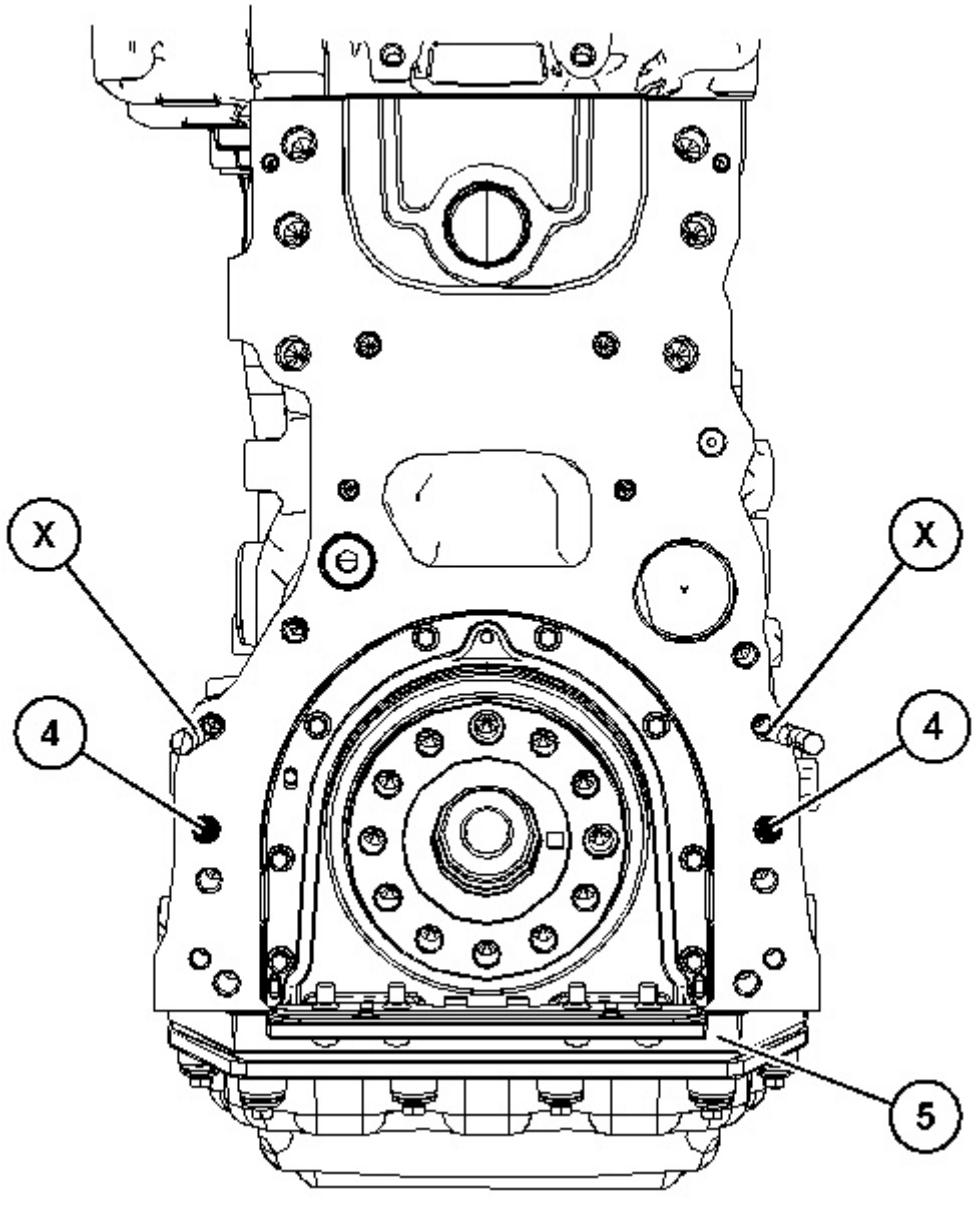

Illustration 3 g06060473

Positions for Tooling (A).

2. Inspect the crankshaft rear seal for leaks. If there are any oil leaks, replace the crankshaft rear seal. Refer to Disassembly and Assembly, "Crankshaft Rear Seal - Remove" and refer to Disassembly and Assembly, "Crankshaft Rear Seal - Install" for the correct procedures.

3. Clean the rear face of the cylinder block. If necessary, install dowels (4) to the cylinder block.
4. Install Tooling (A) in Positions (X) to the cylinder block.
5. Install new dust seal (5).

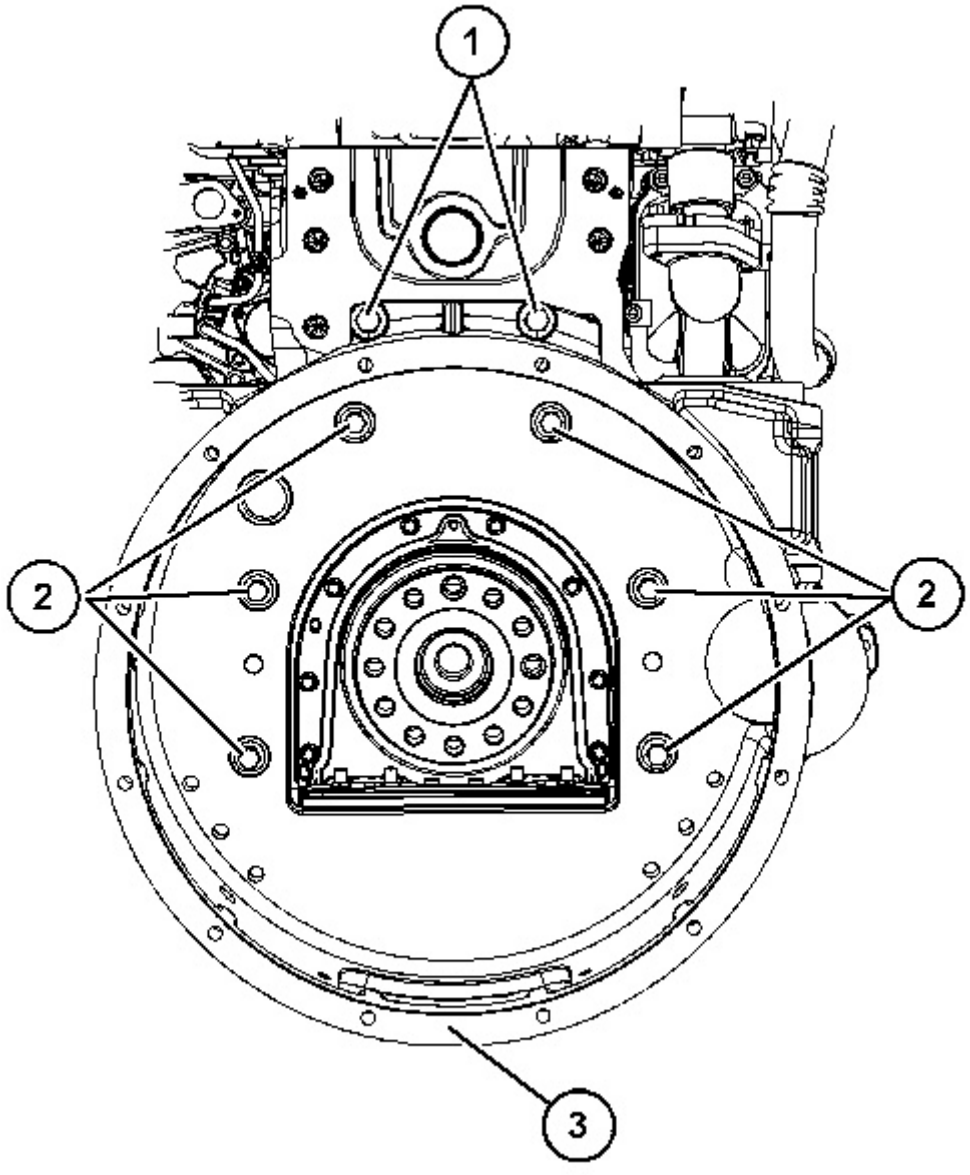

Illustration 4 g06060490

Type E flywheel housing
Bolts (1) are 12 mm
Bolts (2) are 10 mm

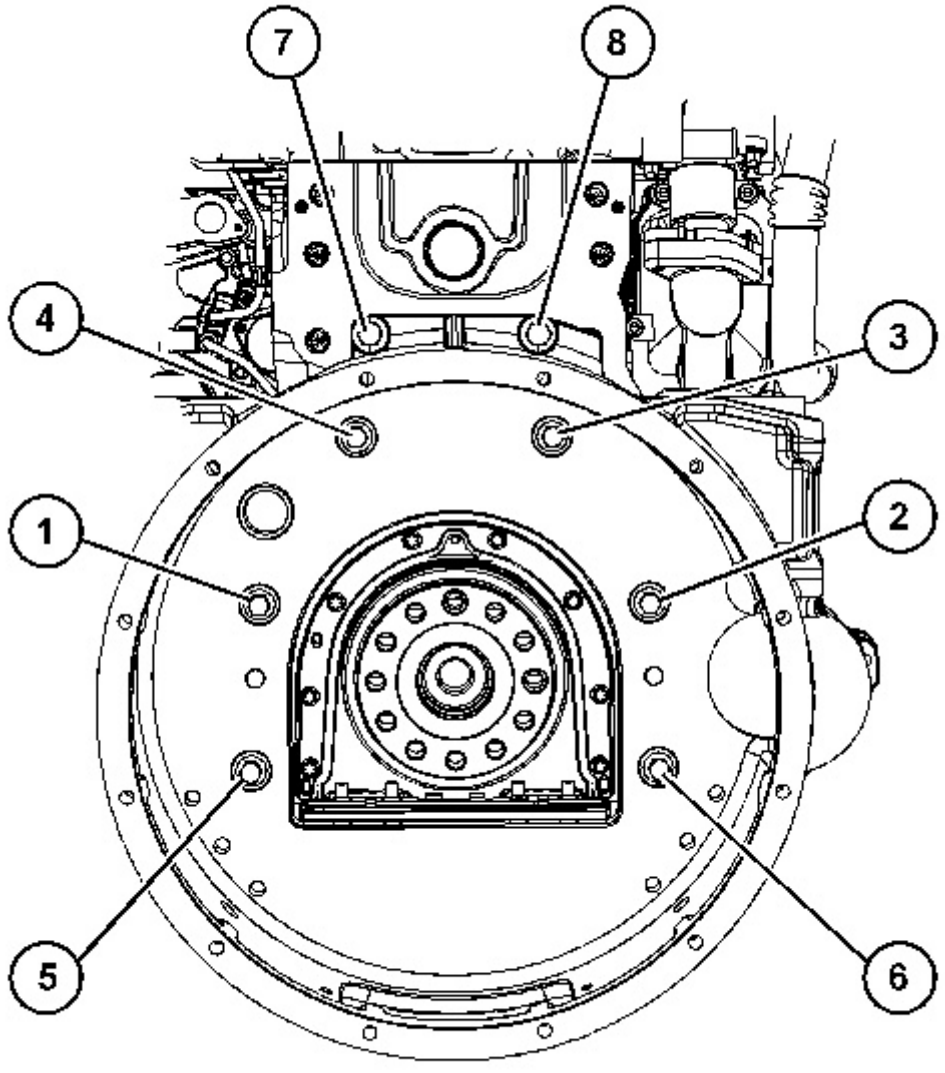

Illustration 5 g06060507

Tightening sequence of Type (E) flywheel housing

6. **Ensure that bolts (1) and bolts (2) are clean and free from oil and grease. Ensure that all threaded holes in the cylinder block are clean and free from oil and grease.**

   The threads of the bolts and the threads in the cylinder block must be clean and dry to prevent too higher torque being applied.

7. Install a suitable lifting device onto the flywheel housing. The weight of the flywheel housing is approximately 40 kg (88 lb).

8. Use the lifting device to align flywheel housing (3) with Tooling (A). Install the flywheel housing to the cylinder block.

9. Install bolts (1) and bolts (2) to the flywheel housing.

10. Remove Tooling (A). Install remaining bolts (2).

11. Follow Step 11.a through Step 11.b to tighten bolts (1) and bolts (2) in the tightening sequence that is shown in Illustration 5.

    a. Tighten bolts (1) to a torque of 78 N·m (58 lb ft).

    b. Tighten bolts (2) to a torque of 63 N·m (46 lb ft).

12. Check the alignment of flywheel housing (3) with the crankshaft. Refer to System Operation, Testing and Adjusting, "Flywheel Housing - Inspect" for more information.

End By:

a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install" for the correct procedure.

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Disassembly and Assembly
C7.1 Industrial Engine
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i05018640

Rear Power Take-Off (RPTO) - Remove

SMCS - 1165-011-RE

Removal Procedure

Table 1

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

Start By:

a. Remove the flywheel. Refer to Disassembly and Assembly, "Flywheel - Remove" for the correct procedure.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

---

1. If necessary, remove the OEM equipment from the rear power take-off (RPTO).

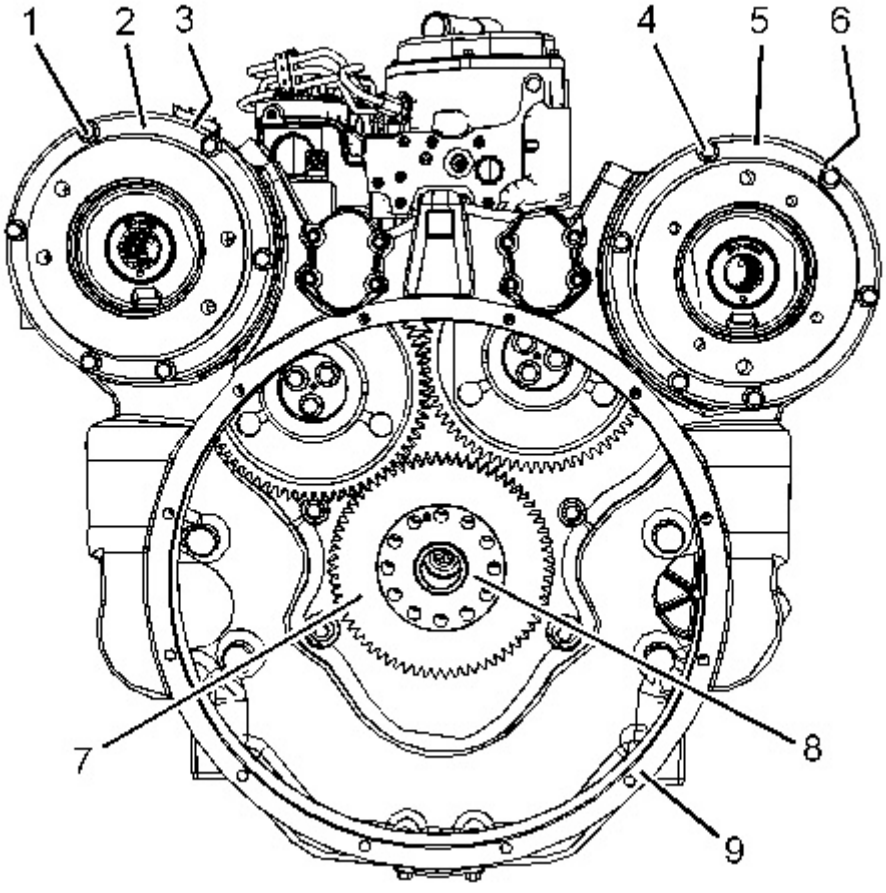

Illustration 1 g02069019

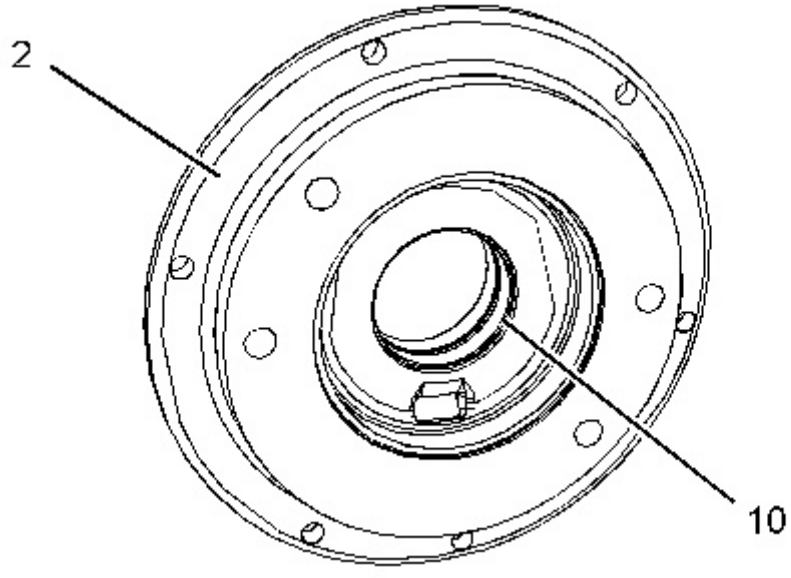

Illustration 2 g02069023

2. Remove bolts (1). Remove adapter (2) from flywheel housing (9). Remove O-ring seal (3) (not shown).

Note: Make a temporary mark on the adapter and the flywheel housing in order to show the correct orientation of the adapter.

3. Remove bolts (4). Remove adapter (5) from flywheel housing (9). Remove O-ring seal (6) (not shown).

   Note: Make a temporary mark on the adapter and the flywheel housing in order to show the correct orientation of the adapter.

4. Remove gear (7) from crankshaft (8).

5. If necessary, follow Steps 5.a through Steps 5.b in order to remove the sleeve bearing from the adapter.

   a. Place adapter (2) onto suitable support.

   b. Use Tooling (A) and a suitable press in order to remove sleeve bearing (10) from adapter (2).

6. Repeat Steps 6.a through Step 6.b in order to remove the sleeve bearing from adapter (5).

   a. Place adapter (5) onto suitable support.

   b. Use Tooling (A) and a suitable press in order to remove sleeve bearing (10) from adapter (5).

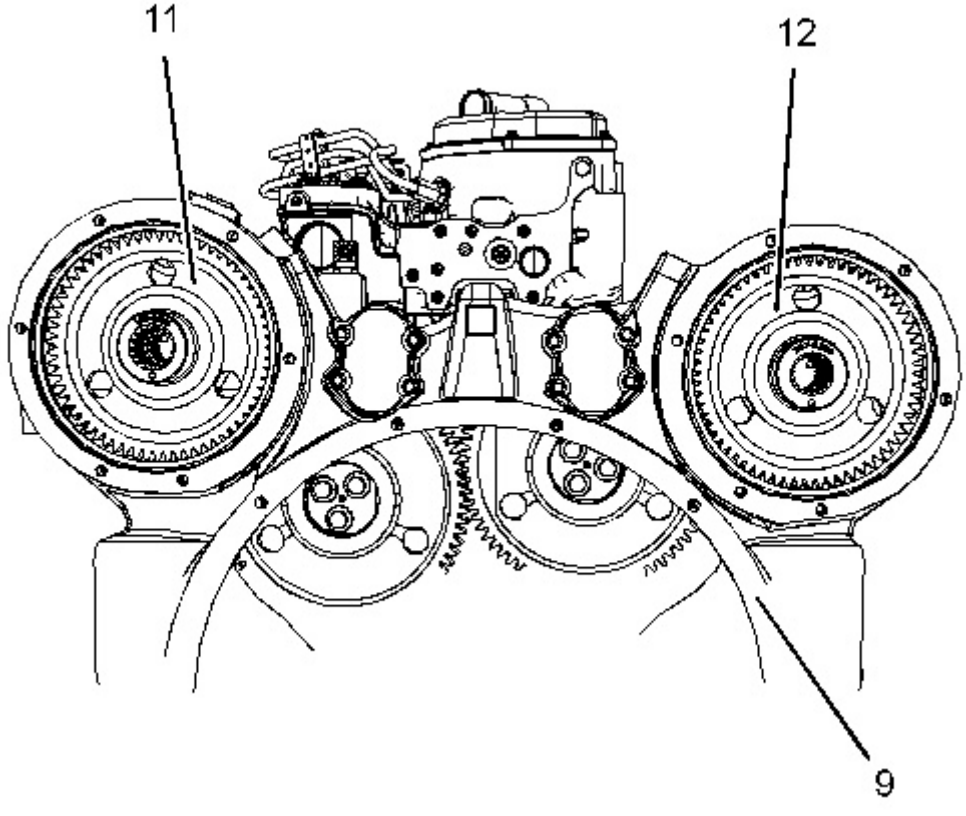

Illustration 3 g02069020

7. Remove gear assembly (11) and gear assembly (12) from flywheel housing (9).

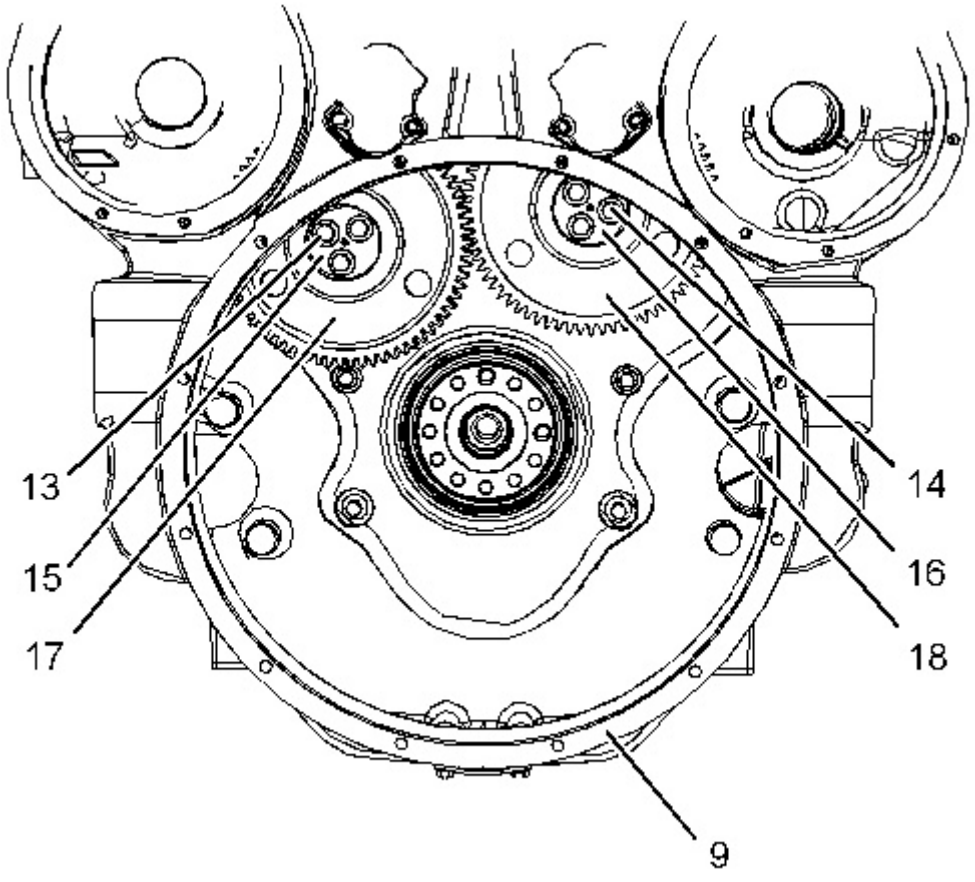

Illustration 4 g02069021

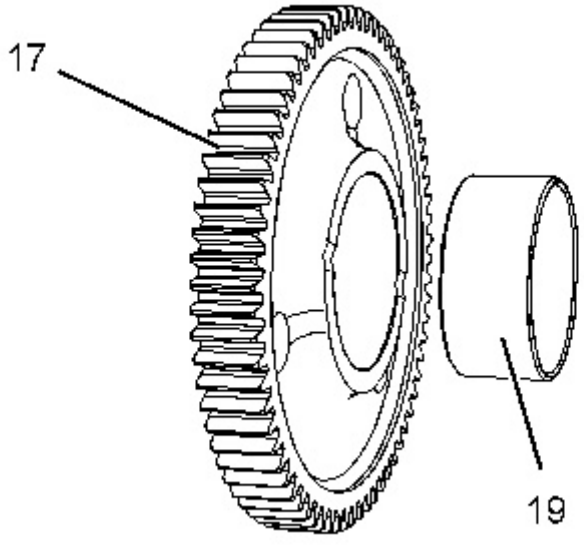

Illustration 5 g02069453

8. Remove bolts (13). Remove gear (17) and idler hub (15) from flywheel housing (9).

9. Remove bolts (14). Remove gear (18) and idler hub (16) from flywheel housing (9).
10. If necessary, follow Steps 10.a through Steps 10.b in order to remove the sleeve bearing from the gear.
    a. Place gear (17) onto suitable support.
    b. Use Tooling (A) and a suitable press in order to remove sleeve bearing (19) from gear (17).

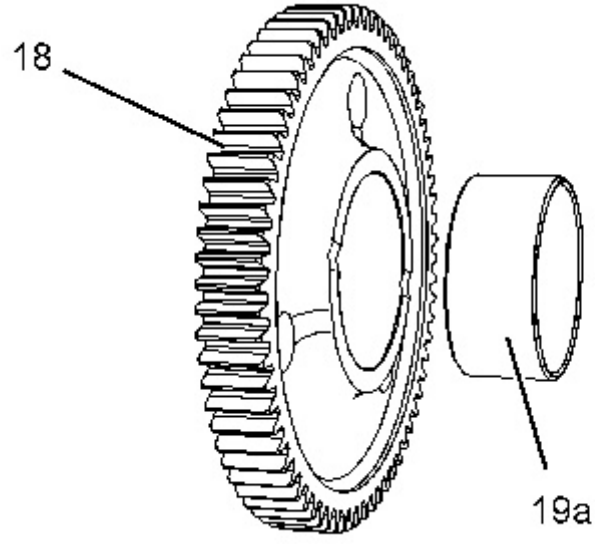

Illustration 6 g03453499

11. Repeat Steps 11.a through Step 11.b in order to remove the sleeve bearing from the remaining gear.
    a. Place gear (18) onto suitable support.
    b. Use Tooling (A) and a suitable press in order to remove sleeve bearing (19a) from gear (18).

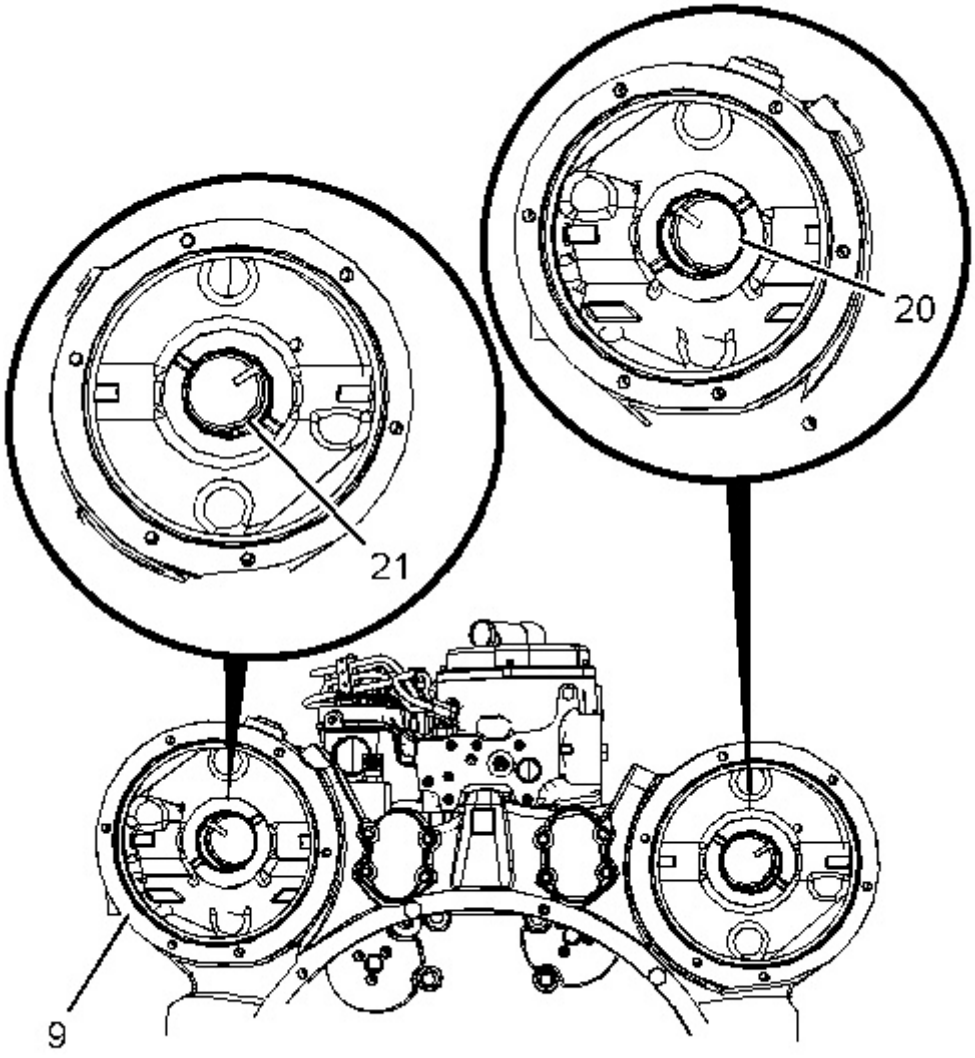

Illustration 7 g02069024

12. If necessary, follow Steps 12.a through Steps 12.b in order to remove the sleeve bearings from the flywheel housing.

    a. Use a suitable tool in order to remove sleeve bearing (20) from flywheel housing (9).

    b. Repeat Step 12.a in order to remove sleeve bearing (21) from flywheel housing (9).

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