Product: TRUCK
Model: 777C TRUCK 4XJ
Configuration: 777C Truck 776C Tractor 4XJ00001-UP (MACHINE) POWERED BY 3508 Engine

Disassembly and Assembly
3500 and 3500B High Displacement Engines for Caterpillar Built Machines
Media Number -SENR1126-33 **Publication Date -01/07/2015** **Date Updated -14/09/2018**

i05845178

Vibration Damper - Remove and Install

SMCS - 1205-010

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Bolts 3/8 - 16 NC by 4 inch	2
B	-	Guide Bolts 1/2 - 13 NC by 4 inch	2
C	138-7575	Link Bracket	2
D	1U-9393	Damper Guide Pin	2

Note: Some different types of vibration dampers are available for use. The following procedure describes the removal and installation of a typical vibration damper assembly and damper group.

Illustration 1 g01207380

1. Before you remove pulley (1) , make a note of the position of pulley (1) on the shaft.

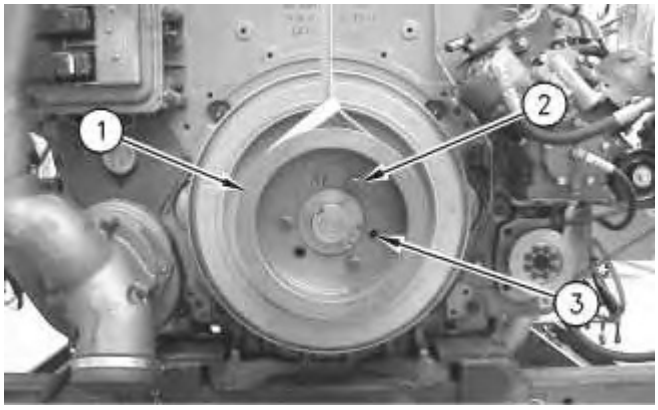

Illustration 2 g00916223

2. Install a suitable lifting device onto pulley (1) . Remove bolts (2) . Reinstall bolts (2) into holes (3) . Tighten bolts (2) enough to remove pulley (1) . The weight of pulley (1) is approximately 39 kg (85 lb).

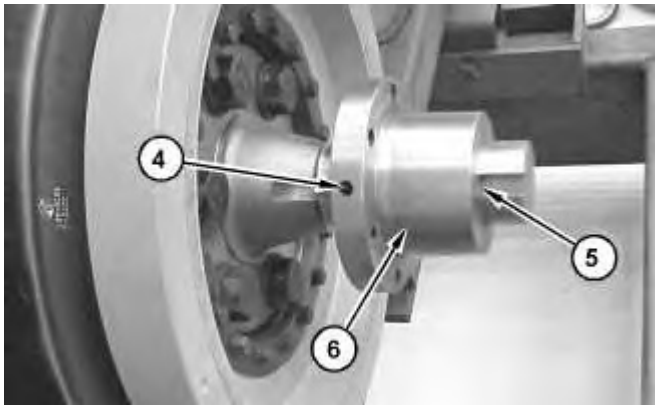

Illustration 3 g01054420

3. Loosen set screw (4) in hub (6) . Remove hub (6) and key (5) .

   Note: If it was necessary to remove the vibration damper as an assembly, proceed to Step 8.

Illustration 4 g00916274

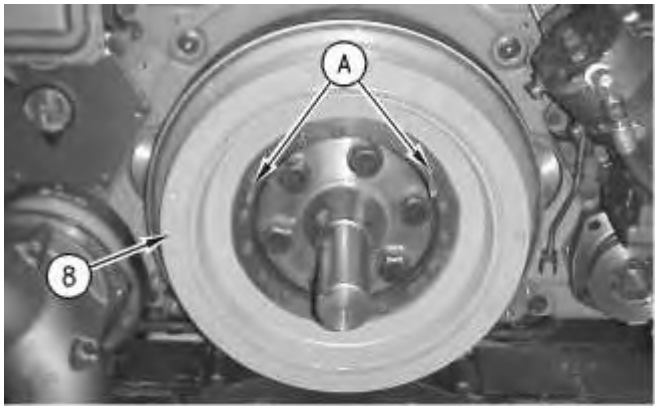

Illustration 5 g00916284

4. Remove two bolts (7) and install Tooling (A) . Remove remaining bolts (7) . Use two people and remove vibration damper (8) . The weight of vibration damper (8) is approximately 30 kg (65 lb).

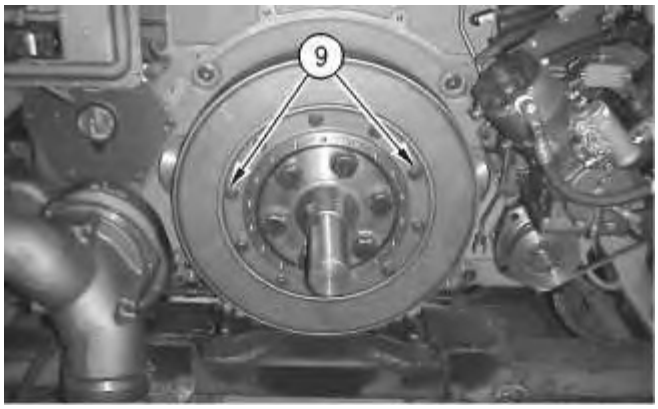

Illustration 6 g00916292

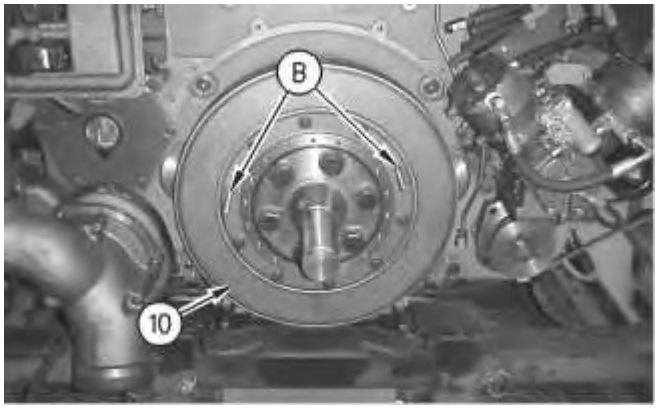

Illustration 7 g00916297

5. Remove two bolts (9) and install Tooling (B) . Remove remaining bolts (9) from vibration damper (10) .

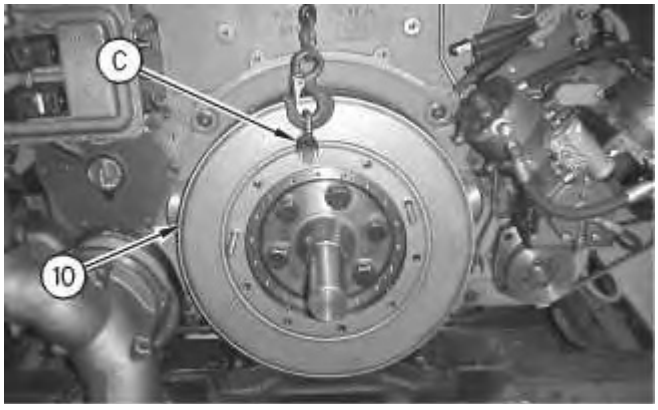

Illustration 8 g00916389

6. Slide vibration damper (10) outward. Install Tooling (C) and a suitable lifting device to vibration damper (10) . Remove vibration damper (10) . The weight of vibration damper (10) is approximately 50 kg (110 lb).

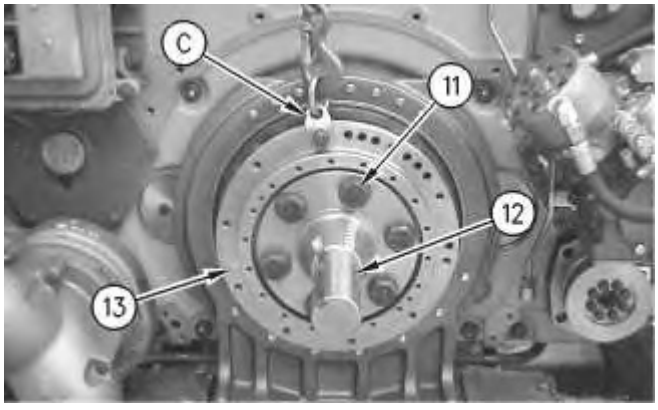

Illustration 9 g00916309

7. Install Tooling (C) and attach a suitable lifting device to hub (13) . Remove bolts (11) . Remove pulley hub (12) and hub (13) . The weight of pulley hub (12) and hub (13) is approximately 36 kg (80 lb).

8. The following steps are for removing the vibration damper as a complete assembly.

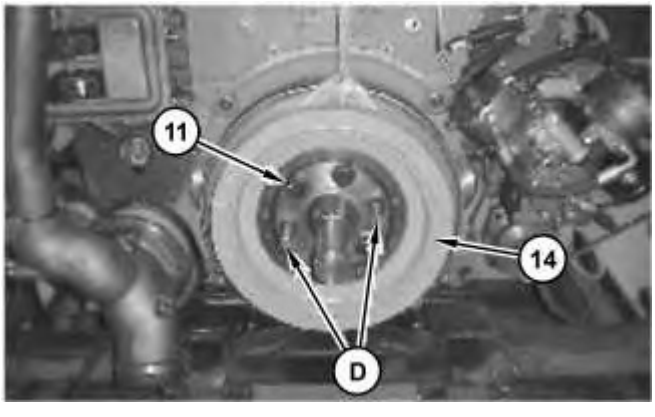

Illustration 10 g01207444

9. Remove two bolts (11) . Install Tooling (D) and a suitable lifting device to vibration damper assembly (14) .

10. Remove remaining bolts (11) and remove vibration damper assembly (14) . The weight of vibration damper assembly (14) is approximately 116 kg (255 lb).

Installation Procedure

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	-	Guide Bolts 3/8 - 16 NC by 4 inch	2
B	-	Guide Bolts 1/2 - 13 NC by 4 inch	2
C	138-7575	Link Bracket	2
D	1U-9393	Damper Guide Pin	2
E	-	Molybdenum Disulfide Base Lubricant	-

1. The following steps are for installation of the vibration damper as a complete assembly.

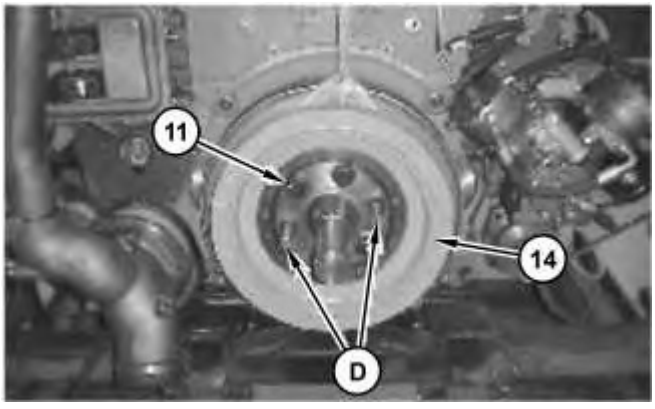

Illustration 11 g01207444

2. Install Tooling (D) . Use a suitable lifting device and slide vibration damper assembly (14) onto Tooling (D) . The weight of vibration damper assembly (14) is approximately 116 kg (255 lb). Install bolts (11) .

   Note: Ensure that the mark on vibration damper (14) is aligned with the mark on the crankshaft.

   Note: Apply Tooling (E) to the threads of bolts (11) prior to installation.

3. Remove Tooling (D) and install two bolts (11) .

   Note: Refer to Specifications, "Vibration Damper" for the correct torque.

   Note: If it was necessary to install the vibration damper as an assembly, proceed to Step 8.

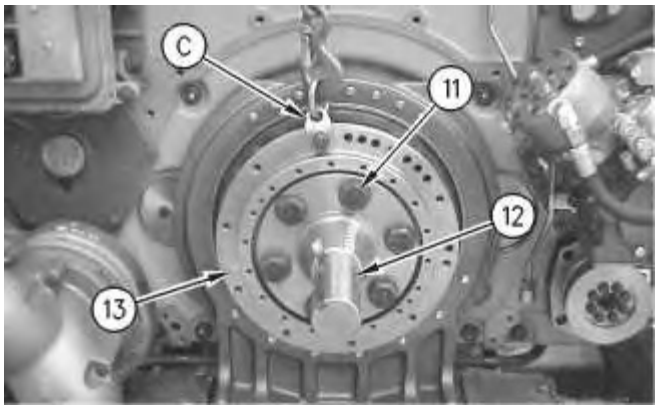

Illustration 12 g00916309

4. Install Tooling (C) and a suitable lifting device to hub (13) . Install hub (13) and pulley hub (12) . The weight of hub (13) and pulley hub (12) is approximately 36 kg (80 lb). Install bolts (11) .

   Note: Apply Tooling (E) to the threads of bolts (11) prior to installation.

   Note: Refer to Specifications, "Vibration Damper" for the correct torque.

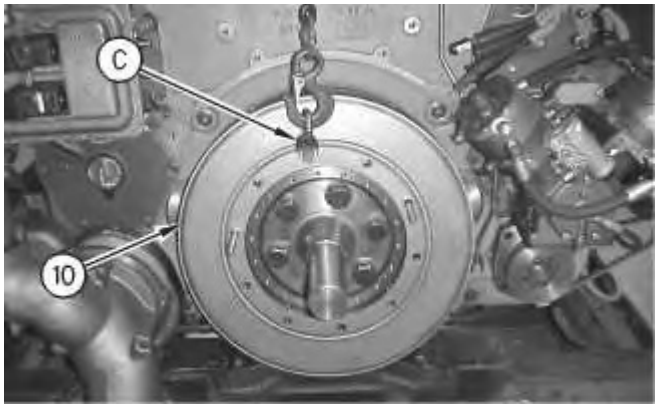

Illustration 13 g00916389

5. Install Tooling (B) . Install Tooling (C) and a suitable lifting device onto vibration damper (10) . Position vibration damper (10) onto Tooling (B) . Install vibration damper (10) . The weight of vibration damper (10) is approximately 50 kg (110 lb).

   Note: Ensure that the mark on vibration damper (10) is aligned with the mark on the crankshaft.

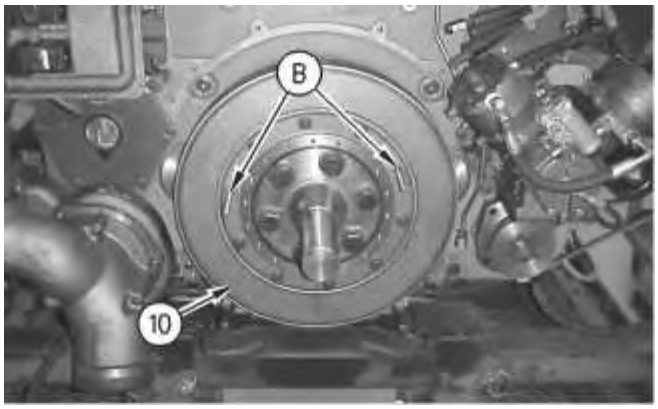

Illustration 14 g00916297

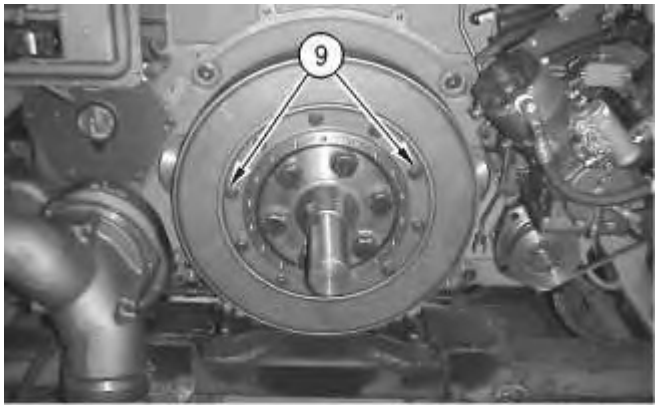

Illustration 15 g00916292

6. Install bolts (9) into vibration damper (10) . Remove Tooling (B) and install two bolts (9) .

   Note: Refer to Specifications, "Vibration Damper" for the correct torque.

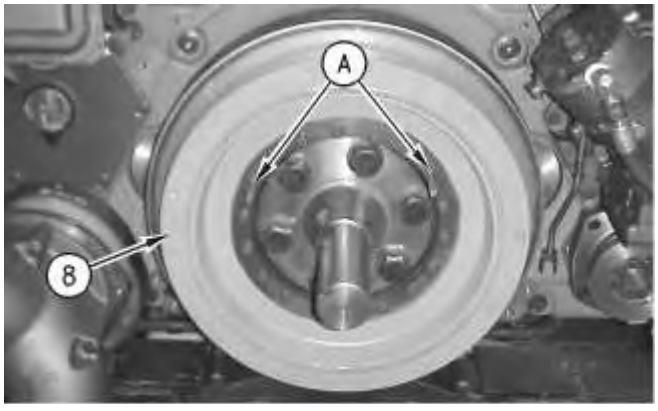

Illustration 16 g00916284

Illustration 17 g00916274

7. Install Tooling (A) . Use two people and install vibration damper (8) . The weight of vibration damper (8) is approximately 30 kg (65 lb). Install bolts (7) . Remove Tooling (A) and install two bolts (7) .

   Note: Ensure that the mark on vibration damper (8) is aligned with the mark on the crankshaft.

   Note: Refer to Specifications, "Vibration Damper" for the correct torque.

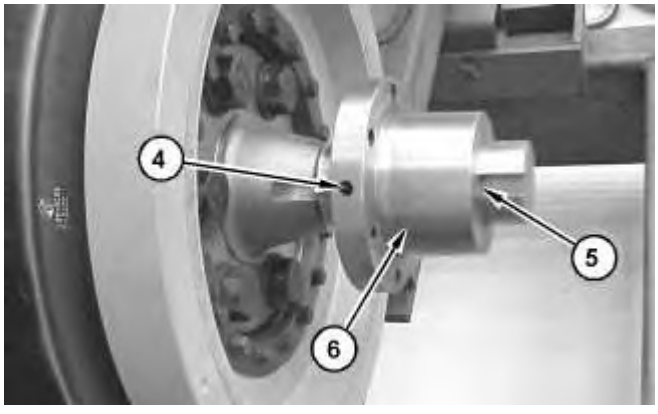

Illustration 18 g01054420

8. Install key (5) and hub (6) . Tighten set screw (4) in hub (6) .

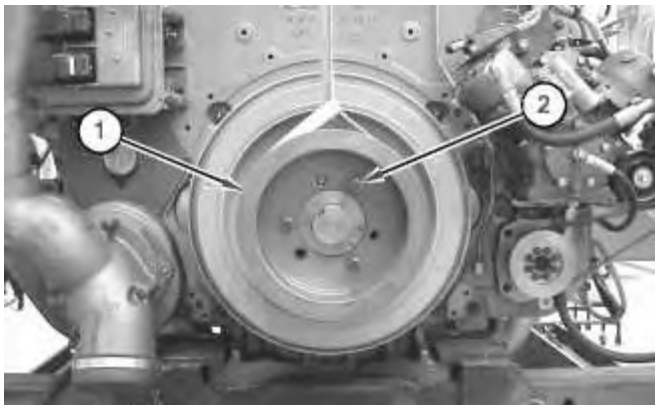

Illustration 19 g01051456

9. Install a suitable lifting device onto pulley (1) . Install pulley (1) . The weight of pulley (1) is approximately 39 kg (85 lb). Install bolts (2) .

Illustration 20 g01207380

10. Check the position of pulley (1) .

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Media Number -SENR1126-33 **Publication Date -01/07/2015** **Date Updated -14/09/2018**

i06616604

Crankshaft Front Seal and Wear Sleeve - Remove

SMCS - 1160-011; 7558-011

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1U-7600	Slide Hammer Puller	1
B	1U-7325	Distorter Adapter	-
	6V-3143	Distorter Adapter(1)	-
C	5P-7409	Sleeve Distorter	1

(1) For use with engines equipped with a seal adapter.

Start By:

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

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Every time that the crankshaft seal is removed from the wear sleeve, a new wear sleeve and crankshaft seal must be installed.

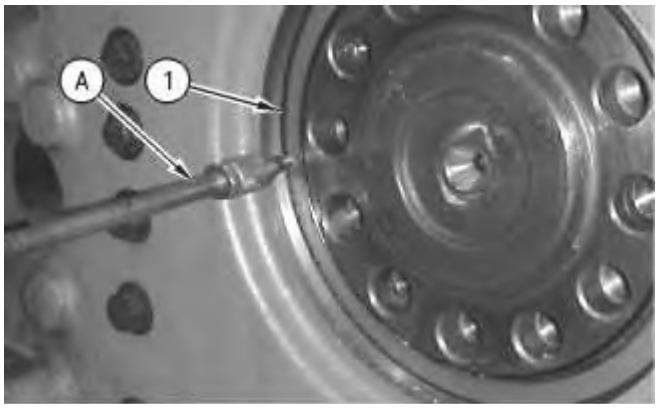

Illustration 1 g00659180

1. Drill three evenly spaced holes in crankshaft front seal (1) and use Tooling (A) to remove crankshaft front seal (1) from the front housing.

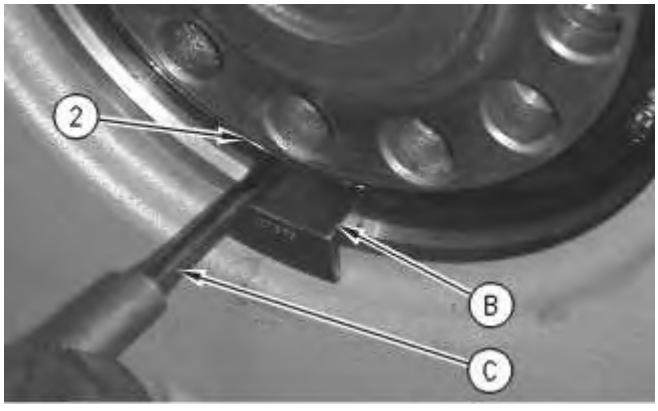

Illustration 2 g00659181

2. Insert Tooling (B) between the front housing and wear sleeve (2).

NOTICE

The use of excessive force on the sleeve distorter can cause the distorter adapter to crack the housing. To help avoid damage to the engine, do not use excessive force to remove the wear sleeve.

3. Insert Tooling (C) between Tooling (B) and wear sleeve (2). Carefully turn Tooling (C) until the edge of the tool creates a crease in wear sleeve (2).

   Repeat this procedure several times around wear sleeve (2) until wear sleeve (2) can be removed by hand.

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i06603192

Crankshaft Front Seal and Wear Sleeve - Install

SMCS - 1160-012; 7558-012

Installation Procedure For Seals 113-8432 and 113-8433

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
D	6V-4003 (1)	Seal Locator As	1
	2N-5006 (1)	Bolt	2
E	8T-3099 (1)	Seal Installer	1
F	9S-8858 (1)	Nut	1
G	-	Loctite 7649 Primer N	1
H	-	Loctite 620 Retaining Compound	1
J	452-6011	Multipurpose Grease	1
K	484-7863 (2)	Tool As	1

(1) For installation of seals 113-8432 and 113-8433

(2) For Installation of seals 436-1478 and 436-1479

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Every time that the crankshaft seal is removed from the wear sleeve, a new wear sleeve and crankshaft seal must be installed.

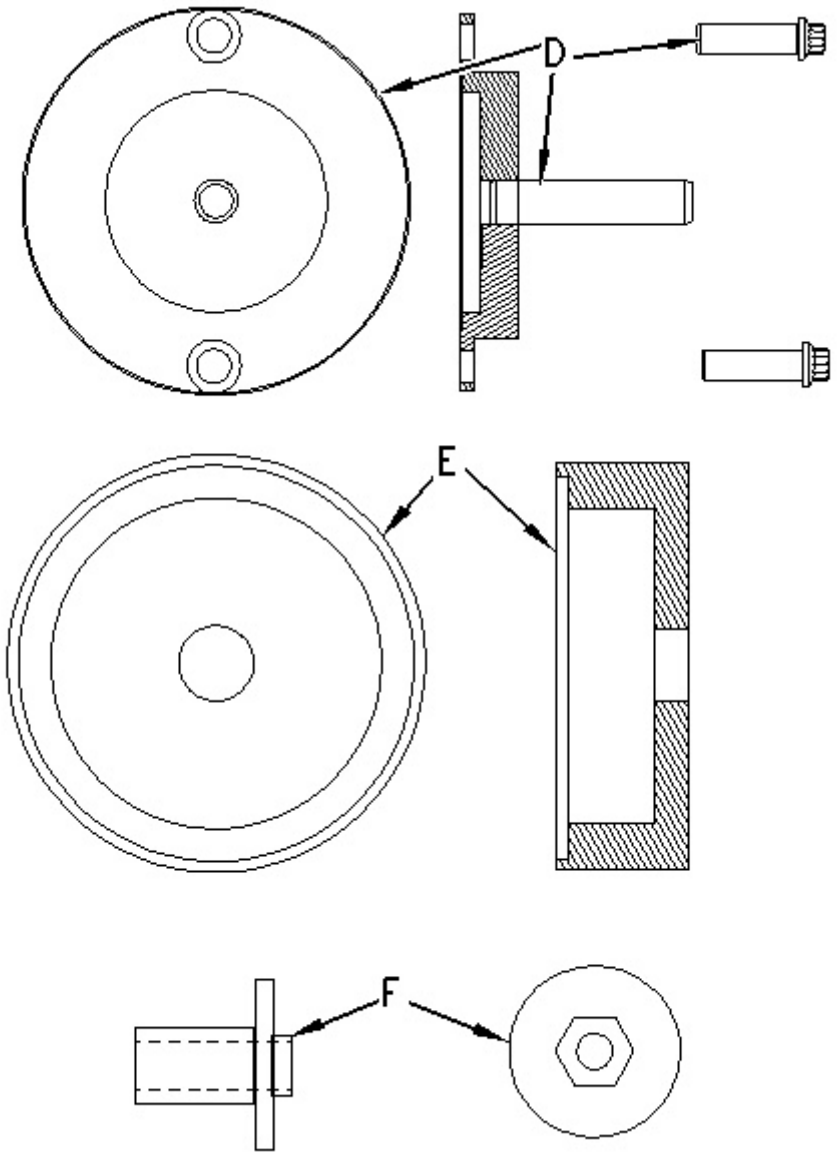

Illustration 1 g01005029

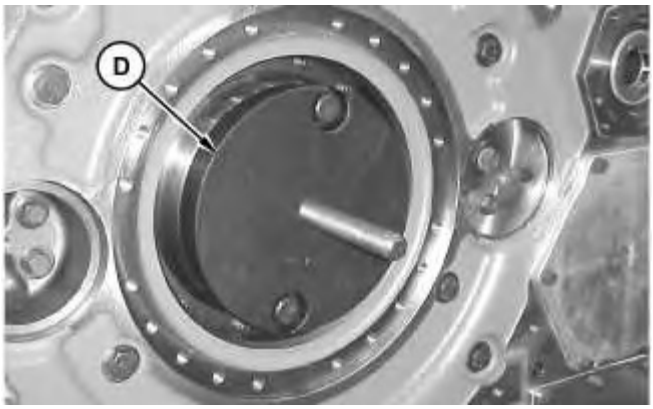

Illustration 2 g01207497

1. Attach Tooling (D) to the crankshaft.
2. Clean the outer diameter of the crankshaft and the inner diameter of the new wear sleeve with Tooling (G).
3. Apply Tooling (H) to the outer diameter of the crankshaft and the inner diameter of the new wear sleeve.

NOTICE

If the crankshaft seal and the wear sleeve come apart during installation, the crankshaft seal and the wear sleeve must be replaced.

Note: The front crankshaft seal and the wear sleeve cannot be interchanged with the rear crankshaft seal and the wear sleeve.

NOTICE

Do not place engine oil on the crankshaft seal for installation. Lubrication of the crankshaft seal can give a false indication of leakage at a later time.

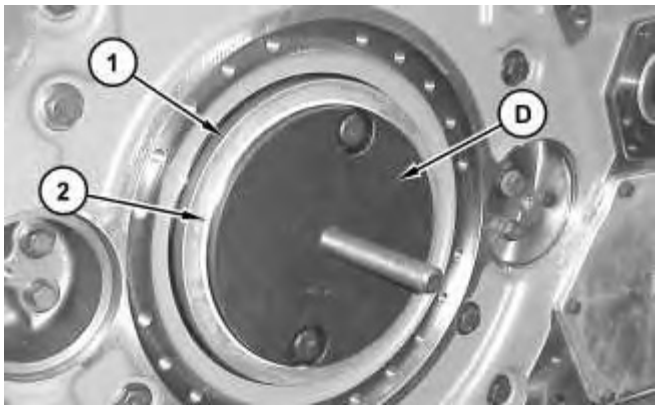

Illustration 3 g01207499

4. Place front seal (1) and wear sleeve (2) onto Tooling (D).

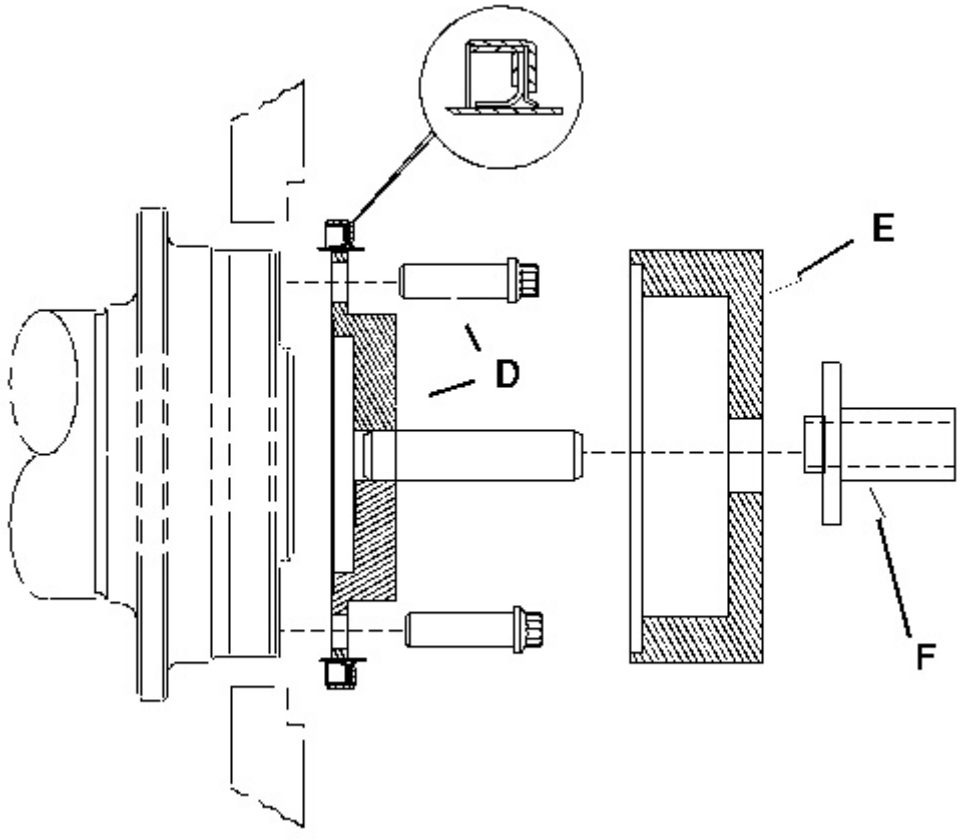

Illustration 4 g01051474

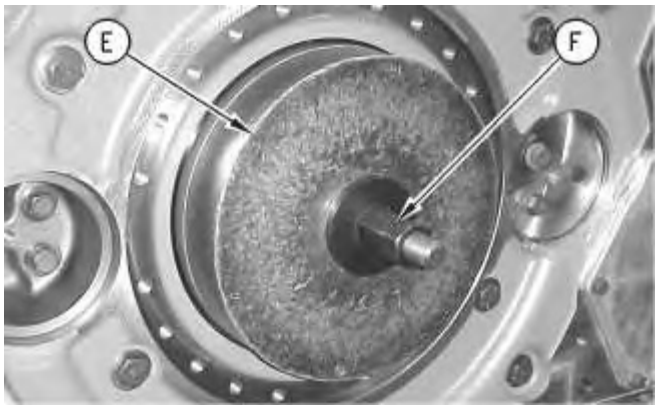

Illustration 5 g01005047

5. Place Tooling (E) onto Tooling (D). Apply Tooling (J) onto the face of the washer on Tooling (F). Install Tooling (F) onto Tooling (E). Tighten the nut until Tooling (E) contacts Tooling (D).

6. Remove the Tooling from the crankshaft.

Installation Procedure For Seals 436-1478 and 436-1479

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Do not place engine oil on the crankshaft seal for installation. Lubrication of the crankshaft seal can give a false indication of leakage at a later time.

Note: Ensure that there are no imperfections on the mating surfaces of the crankshaft, the installation tooling, or on the sealing surface of the crankshaft. Surface imperfections can distort the seal during installation and will cause the seal to malfunction.

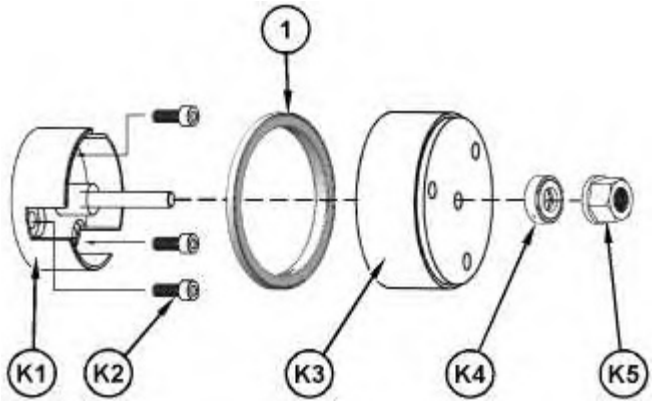

Illustration 6 g06042381

1. Using Tooling (K), install front seal (1) as outlined in the following steps:
    a. Install pilot (K1) to the crankshaft and install bolts (K2).
    b. Position front seal (1) onto pilot (K1).
    c. Install driver (K3) onto the shaft of pilot (K1). Mark driver (K3) at the 12 O' Clock position. Install bearing (K4) and nut (K5).
    d. Tighten nut (K5) until the base of driver (K3) contacts the skirt of pilot (K1). Loosen nut (K5) and rotate driver (K3) 180 degree. Retighten nut (K5) until driver (K3) contacts the skirt of pilot (K1).
2. Remove Tooling (K).

End By:

a. Install the vibration damper.

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i02415754

Flywheel - Remove and Install

SMCS - 1156-010

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7573	Link Bracket	2
B	-	Guide Bolts 1 - 14 NF by 8 inch	2
C	2D-1201	Eyebolts	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Remove the magnetic pickups.

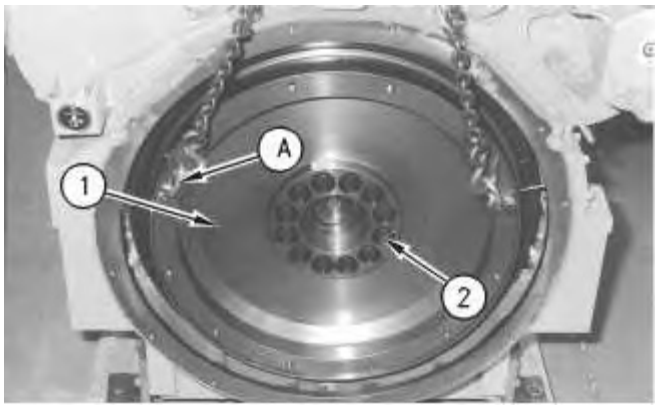

Illustration 1 g00911678

2. Install Tooling (A) on flywheel (1) and attach a suitable lifting device. The weight of flywheel (1) is approximately 167 kg (370 lb).
3. Remove two bolts (2) on each side of the crankshaft.
4. Install Tooling (B).
5. Remove remaining bolts (2).
6. Remove flywheel (1).

   Use the following procedure if flywheel (1) is not easily separated from the crankshaft:

   a. Install Tooling (C) in each side of flywheel (1).

   b. Use a prybar to remove flywheel (1) from the crankshaft.

Installation Procedure

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7573	Link Bracket	2
B	-	Guide Bolts 1 - 14 NF by 8 inch	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Inspect the condition of the flywheel ring gear. Use the following procedure in order to replace the ring gear, if necessary.

    a. Remove the damaged ring gear from the flywheel.

    b. Raise the temperature of the new ring gear.

    c. Install the gear on the flywheel. Ensure that the chamfer of the gear teeth will be toward the pinion of the starting motor.

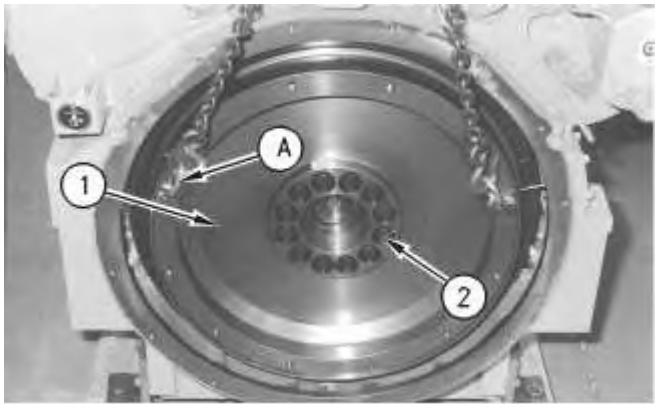

Illustration 2 g00911678

2. Install Tooling (B) in the end of the crankshaft.
3. Install Tooling (A) onto flywheel (1) and attach a suitable lifting device. The weight of flywheel (1) is approximately 167 kg (370 lb).

    Note: Ensure that the mark on flywheel (1) is aligned with the mark on the crankshaft.

4. Lift flywheel (1) into position onto Tooling (B).
5. Apply clean engine oil to bolts (2) and install bolts (2).
6. Remove Tooling (A) and Tooling (B). Install remaining two bolts (2). Tighten bolts (2) to the correct torque.

    Note: Refer to Specifications, "Flywheel" for the correct torque.

7. Install the magnetic pickups.