



# Service Repair Manual

## **Models**

318B L, 318B N and 318B LN  
Excavator

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01646268

## Flywheel - Remove

SMCS - 1156-011

## Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	1

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

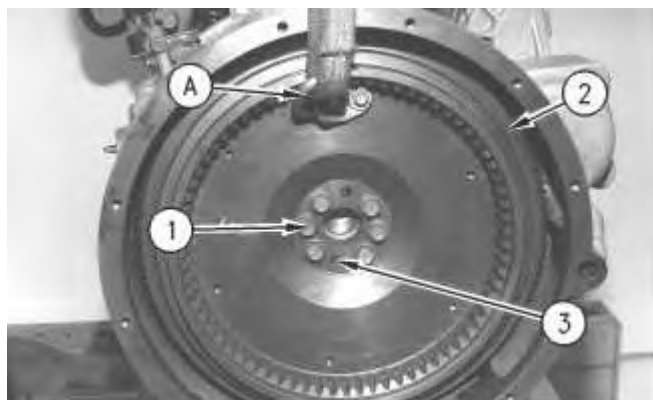


Illustration 1

g00527024

1. Install Tool (A), a strap, and a suitable lifting device onto flywheel (2) .
2. Remove six bolts (1) that secure flywheel (2) from the crankshaft.
3. Remove flywheel (2). The weight of the flywheel is 50 kg (110 lb).

**Note:** Dowel pin hole (3) is slightly offset in order to ensure correct installation.

4. Check the condition of the dowels (not shown). If the dowels are damaged, use new parts for replacement.

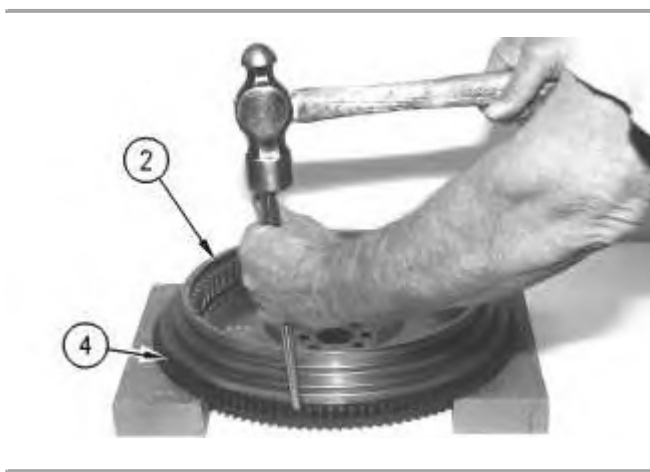


Illustration 2

g00527069

5. Check the condition of the ring gear (4). Replace the ring gear with a new part if the gear is worn or damaged.
6. Place flywheel (2) and ring gear (4) on a suitable support.

**Note:** Identify the orientation of the ring gear on the flywheel for the correct positioning when the new ring gear is installed.

7. Use a hammer and a punch in order to remove ring gear (4) from the flywheel.

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01646270

## Flywheel - Install

SMCS - 1156-012

## Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	1

### NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



### WARNING

Always wear protective gloves when handling parts that have been heated.

1. Use an oven and heat ring gear (2) to a maximum temperature of 150 °C (302 °F). Install the ring gear.



Illustration 1

g00562859

2. Position the ring gear (4) on flywheel (2) .

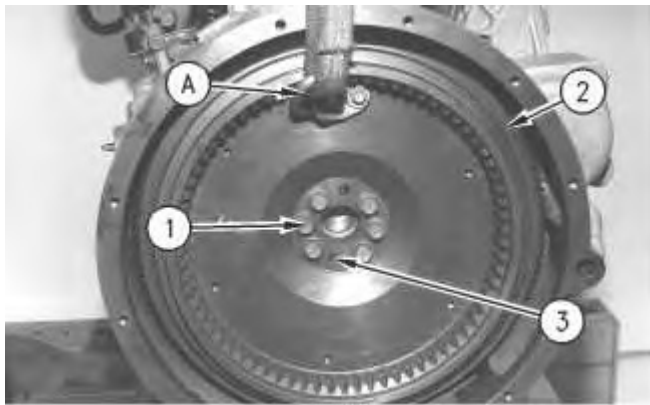


Illustration 2

g00527024

3. Check the condition of the dowels (not shown). If the dowels are damaged, use new parts for replacement.
4. Install Tool (A), a strap, and a suitable lifting device onto flywheel (2) .
5. Install flywheel (2). The weight of the flywheel is 50 kg (110 lb).

**Note:** Dowel pin hole (3) is slightly offset in order to ensure correct installation.

6. Install six bolts (1) in order to secure flywheel (2) onto the crankshaft. Tighten the bolts to a torque of  $83 \pm 5$  N·m ( $61 \pm 4$  lb ft).
7. Remove Tool (A) .
8. Check the flywheel runout. Refer to Testing and Adjusting, "Flywheel - Inspect" for more information on flywheel runout.



## Service Information System

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

### Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i05485410

## Crankshaft Rear Seal - Remove

SMCS - 1161-011

### Removal Procedure

Table 1

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

#### Start By:

- A. Remove the flywheel.

---

#### NOTICE

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---

#### 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, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.**

**Dispose of all fluids according to local regulations and mandates.**

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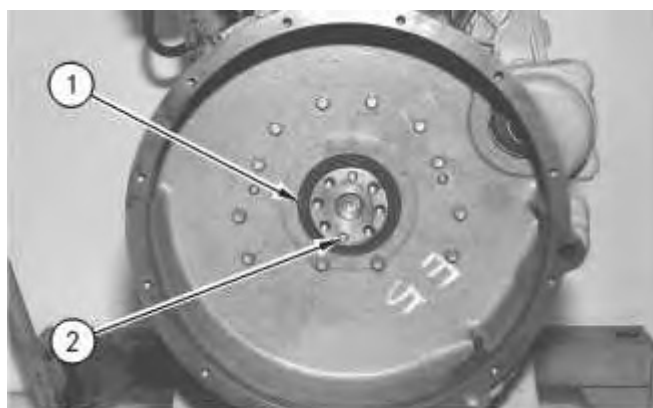


Illustration 1

g00527955

1. Drill three evenly spaced 3 mm (.12 inch) holes in crankshaft rear seal (1) .
2. Use Tool (A) in order to remove the crankshaft rear seal.

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i05485391

## Crankshaft Rear Seal - Install

SMCS - 1161-012

### Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	438-3244	Oil Seal Installer	1
B	438-3245	Seal Adapter	1
C	6V-3303	Bolt	1
D	4B-5275	Washer	1
E	9U-6172	Bolt	2

---

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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1. Clean the faces of all the mating parts. Apply a thin coat of clean engine oil to a new crankshaft rear seal.
-

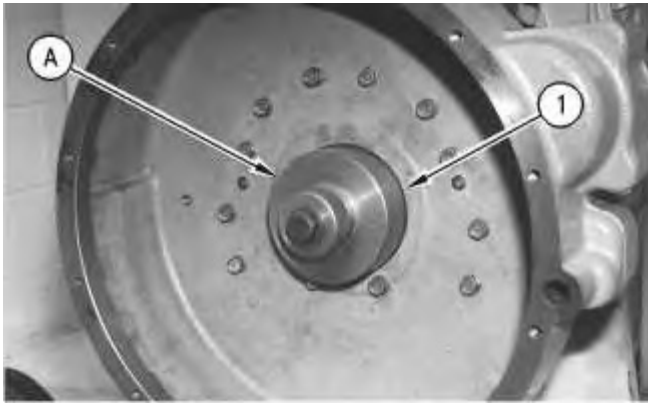


Illustration 1

g00528113

2. Position Tooling (B) onto the crankshaft and install Tooling (E) .

**Note:** Be sure that Tooling (B) is correctly aligned with the crankshaft.

3. Put new crankshaft rear seal (1) in Tooling (A) .
4. Install Tooling (C) , Tooling (D) , and Tooling (A) on Tooling (B) .
5. Push crankshaft rear seal (1) onto the crankshaft until Tooling (A) bottoms out.
6. Remove the tooling from the crankshaft. Check the crankshaft rear seal for correct installation.

**End By:** Install the flywheel.

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01646275

# Flywheel Housing - Remove and Install

SMCS - 1157-010

## Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	135-7575	Link Bracket	1

### Start By:

- A. Remove the electric starting motor. Refer to Disassembly and Assembly, "Electric Starting Motor- Remove and Install".
- B. Remove the crankshaft rear seal. Refer to Disassembly and Assembly, "Crankshaft Rear Seal - Remove".

---

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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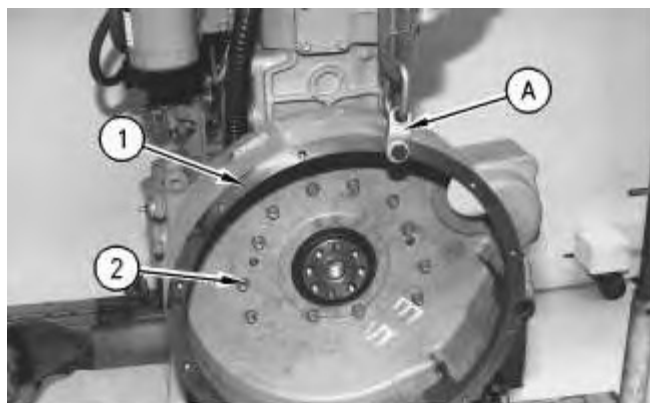


Illustration 1

g00528388

1. Install Tool (A), a strap, and a suitable lifting device onto flywheel housing (1) .
2. Remove twelve bolts (2) and the washers that secure flywheel housing (1) to the cylinder block.
3. Remove flywheel housing (1). The weight of the flywheel is 30 kg (66 lb).

## Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	1

---

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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Illustration 2

g00528389

1. Check the condition of two dowels (4). If dowels (4) are damaged, use new parts for replacement.
2. Clean old gasket material (3) from the surfaces of the cylinder block and the flywheel housing that contact each other. Install a new gasket on the cylinder block (not shown).

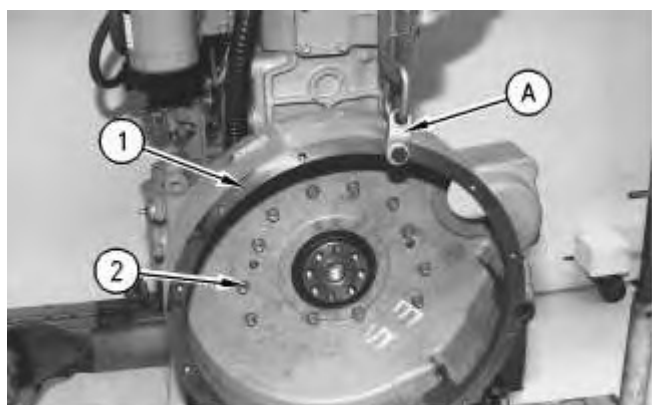


Illustration 3

g00528388

3. Install flywheel housing (1) .
4. Install the washers and twelve bolts (2) in order to secure flywheel housing (3) to the cylinder block.
5. Remove Tool (A) .

### End By:

- a. Install the electric starting motor. Refer to Disassembly and Assembly, "Electric Starting Motor- Remove and Install".
- b. Install the crankshaft rear seal. Refer to Disassembly and Assembly, "Crankshaft Rear Seal - Install".


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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01646277

# Vibration Damper and Pulley - Remove and Install

SMCS - 1205-010

## Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	6V-9120	Socket <sup>(1)</sup>	1 is
B	1P-2321	Combination Puller	1

<sup>(1)</sup> Tool (A) is a 46 mm socket.

### Start By:

A. Remove the V-belts. Refer to Disassembly and Assembly, "V-Belts - Remove and Install".

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### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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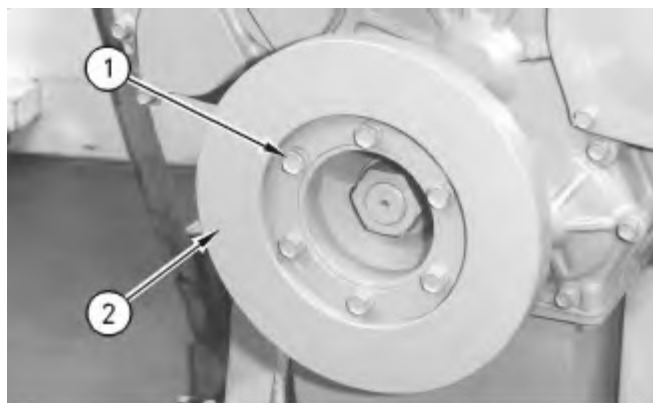


Illustration 1

g00528749

1. Remove six bolts (1) and the washers from vibration damper (2). Remove vibration damper (2) from crankshaft pulley (5) .

**Note:** Inspect the vibration damper for leaks and dents. If either condition exists, replace the vibration damper with a new part.

- 2.

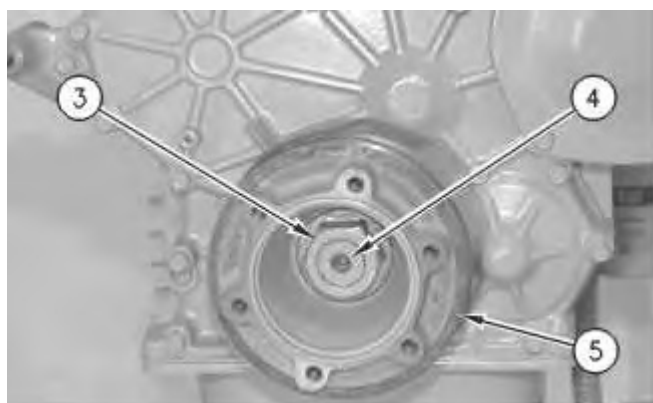


Illustration 2

g00559259

3. Use Tool (A) and remove nut (3) and the washer from the crankshaft.

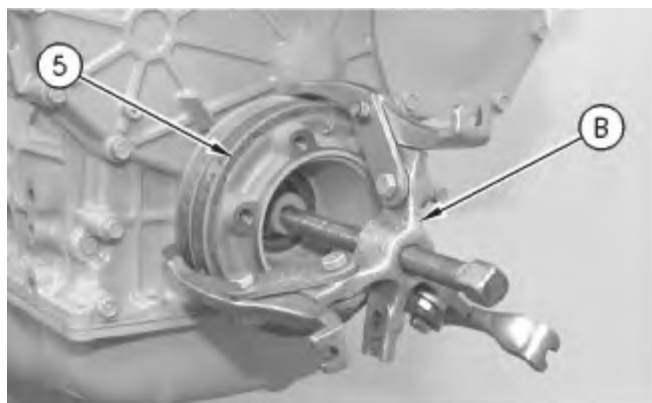


Illustration 3

g00559308

4. If necessary, use Tool (B) and remove crankshaft pulley (5) .

## Installation Procedure

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### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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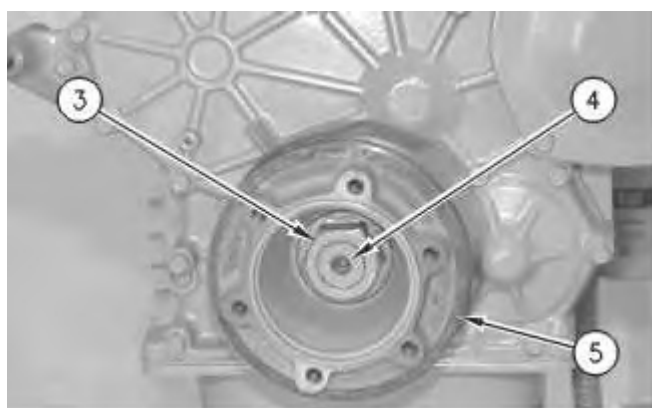


Illustration 4

g00559259

1. Install crankshaft pulley (5) with the washer and nut (3) onto crankshaft (4) .
  2. Use Tool (A) to tighten nut (3) to a torque of  $490 \pm 10 \text{ N}\cdot\text{m}$  ( $360 \pm 7 \text{ lb ft}$ ). Hit nut (3) with a hammer and torque the bolt again to  $490 \pm 10 \text{ N}\cdot\text{m}$  ( $360 \pm 7 \text{ lb ft}$ ).
-

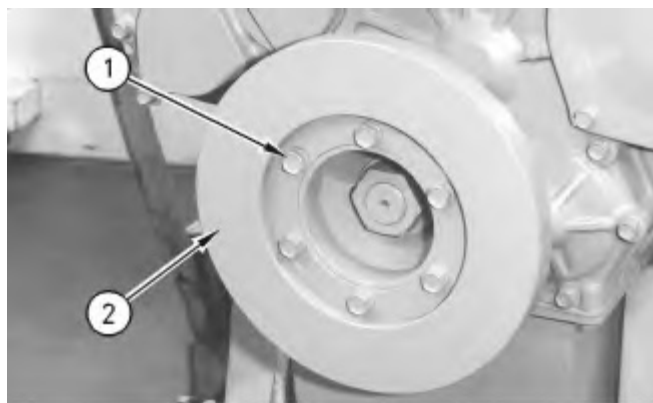


Illustration 5

g00528749

3. Use six bolts (1) and the washers in order to install vibration damper (2) on the crankshaft pulley.

**End By:** Install the V-belts. Refer to Disassembly and Assembly, "V-Belts - Install".

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01027796

# Crankshaft Front Seal - Remove

SMCS - 1160-011

## Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7600	Slide Hammer Puller	1

### Start By:

- A. Remove the vibration damper and the crankshaft pulley. Refer to Disassembly and Assembly, "Vibration Damper and Pulley - Remove and Install".

---

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

---

### NOTICE

**Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the machine. 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 in Caterpillar machines.**

**Dispose of all fluids according to local regulations and mandates.**

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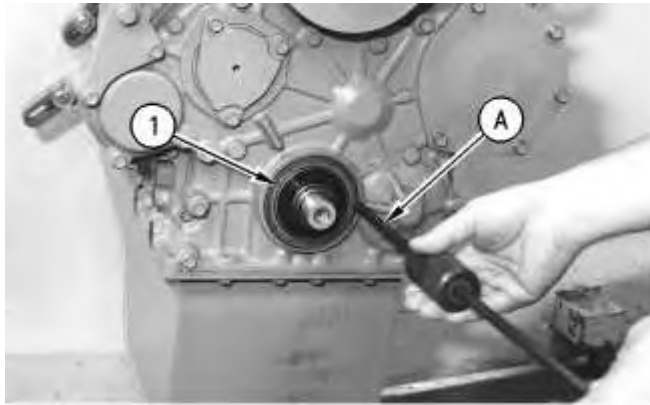


Illustration 1

g00529162

1. Drill three evenly spaced 3 mm (.12 inch) holes in crankshaft front seal (1) .
2. Use Tool (A) and remove crankshaft front seal (1) .

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01027827

## Crankshaft Front Seal - Install

SMCS - 1160-012

### Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	4C-6376	Seal Installer Stud	1
	4C-6377	Seal Installer Washer	1
	4C-6378	Seal Installer Sleeve	1

---

### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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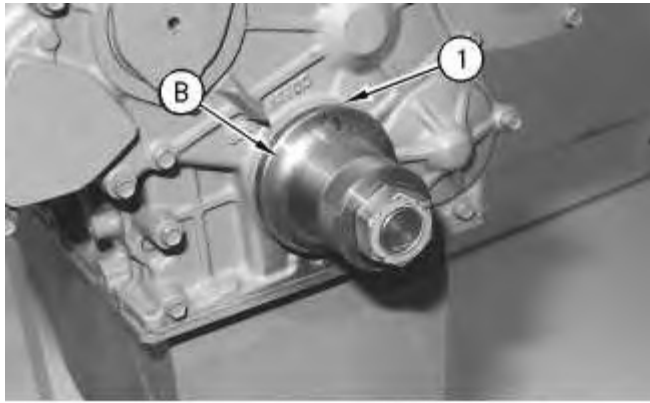


Illustration 1

g00529163

1. Clean the faces of all the mating parts. Apply a thin coat of clean engine oil to a new crankshaft front seal.
2. Install new crankshaft front seal (1) with Tool (A) .
3. Remove Tool (A) and check crankshaft front seal (1) for correct installation.
4. Apply clean engine oil to the face of the crankshaft pulley that will be in contact with the new crankshaft front seal.

**End By:** Install the vibration damper and the pulley. Refer to Disassembly and Assembly, "Vibration Damper and Pulley - Remove and Install".

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

### Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01646292

## Gear Group (Front) - Remove - Idler Gear Only

SMCS - 1206-011

### Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9U-6148	Idler Shaft Puller	1

#### Start By:

- A. Remove the front housing. Refer to Disassembly and Assembly, "Housing (Front) - Remove".

---

#### NOTICE

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---

#### NOTICE

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**Dispose of all fluids according to local regulations and mandates.**

---

**Note:** Before removal, ensure that the marks on the timing gears are in alignment. Align the fuel injection drive gear with the "33" mark with the "3" mark on the idler gear. Make an alignment of the "2" mark on the camshaft gear with the "22" mark on the idler gear. Align the "1" mark on the crankshaft gear with the "11" mark on the idler gear. The No. 1 cylinder is at the top center position when these marks are in alignment.

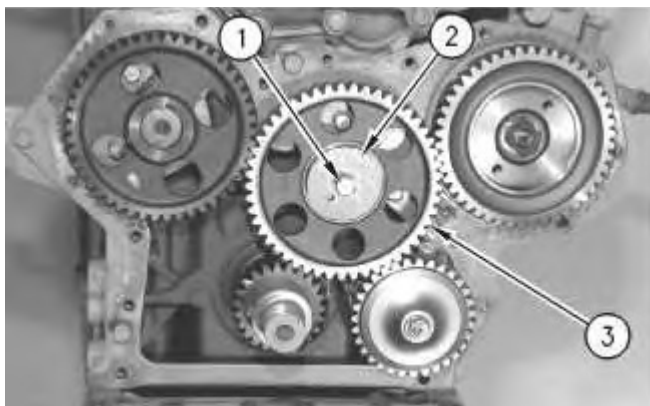


Illustration 1

g00559575

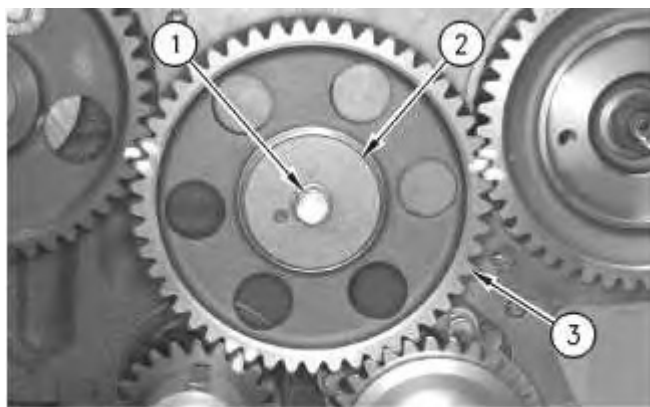


Illustration 2

g00559536

1. Remove idler gear bolt (1) and the washer from the idler gear shaft .
2. Remove thrust plate (2) .
3. Remove idler gear (3) .

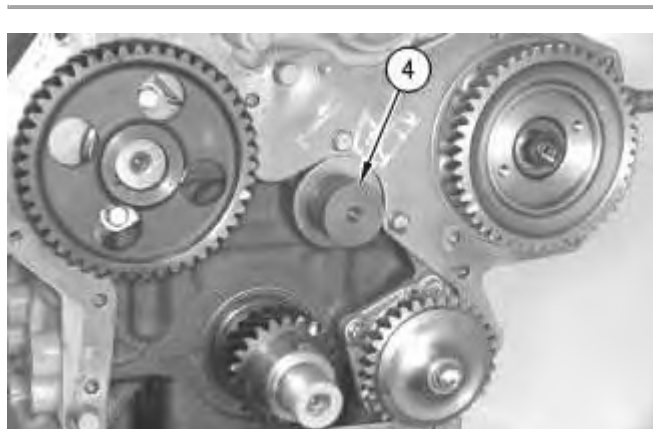


Illustration 3

g00559567

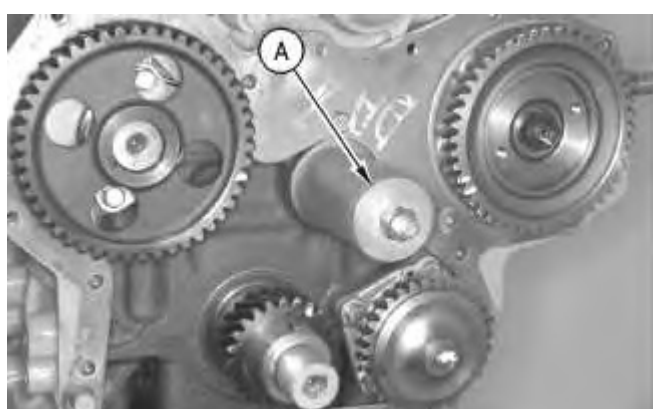


Illustration 4

g00559569

4. Use Tool (A) and remove idler shaft (4) from the cylinder block.



Illustration 5

g00559572

5. If necessary, remove five bolts (5) that hold front plate (6) to the cylinder block.

6. Remove front plate (6) and the gasket.

**Note:** See the following list for the removal of the other gears in the front gear group.

- In order to remove the camshaft gear, refer to Disassembly and Assembly, "Camshaft - Remove and Install".
- In order to remove the fuel injection pump gear, refer to Disassembly and Assembly, "Fuel Injection Pump Housing and Governor - Remove".
- In order to remove the gear to the engine oil pump, refer to Disassembly and Assembly, "Engine Oil Pump - Remove".
- In order to remove the crankshaft front gear, refer to Disassembly and Assembly, "Crankshaft Gear - Remove and Install".

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Product: EXCAVATOR

Model: 318B N EXCAVATOR 7KZ

Configuration: 318B L &amp; 318B LN Excavators 7KZ00001-UP (MACHINE) POWERED BY 3046 Engine

## Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01045442

### Gear Group (Front) - Install - Idler Gear Only

SMCS - 1206-012

### Installation Procedure

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#### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

---



Illustration 1

g00559572

1. Install a new gasket and front plate (6) .

**Note:** Ensure that all mating surfaces are clean and free of old gasket material.



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2. Install five bolts (5) that hold front plate (6) to the cylinder block. Tighten these bolts to a torque of 10 to 13 N·m (7 to 10 lb ft).

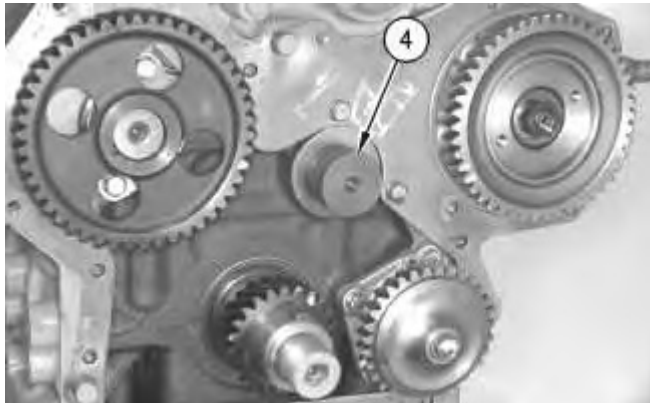


Illustration 2

g00559567

3. Install idler shaft (4) onto the cylinder block.

**Note:** If necessary, cool the idler shaft to 0 °C (32 °F) before installation.

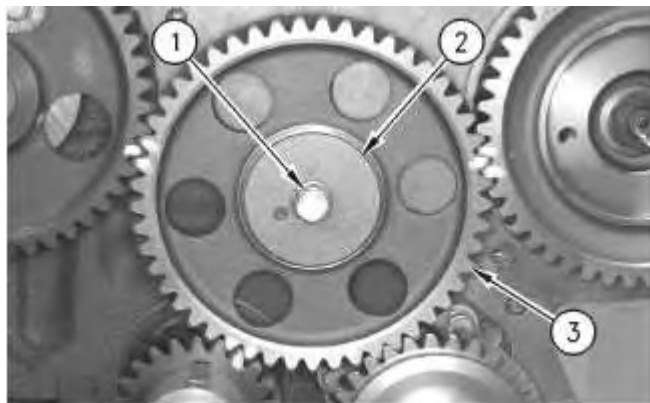


Illustration 3

g00559536

**Note:** Ensure that the marks on the timing gears are in alignment. Align the fuel injection drive gear with the "33" mark with the "3" mark on the idler gear. Make an alignment of the "2" mark on the camshaft gear with the "22" mark on the idler gear. Align the "1" mark on the crankshaft gear with the "11" mark on the idler gear. The No. 1 cylinder is at the top center position when these marks are in alignment.

4. Install idler gear (3) .
5. Install thrust plate (2) .
6. Install the washer and idler gear bolt (1) onto thrust plate (2). Tighten idler gear bolt (1) to a torque of  $34 \pm 5$  N·m ( $25 \pm 4$  lb ft).

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