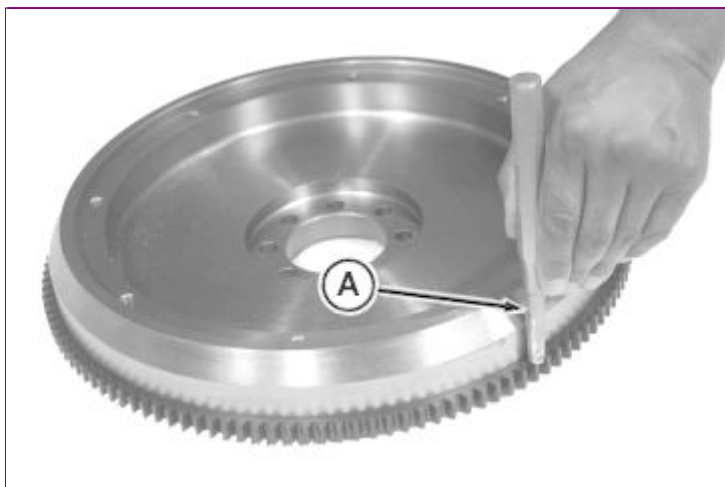


## CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Flywheel Ring Gear — Removal

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### Flywheel Ring Gear — Removal



RG17632-UN: Flywheel with Ring Gear

#### LEGEND:

A - Brass Drift

---



#### **CAUTION:**

*Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer and do not exceed 182°C (360°F). Do not allow a flame or heating element to be in direct contact with the oil. Heat the oil in a well ventilated area. Plan a safe handling procedure to avoid burns.*

---

1. Perform [Flywheel — Removal](#) .

Special Tools:

- [JDG1571](#) —Timing Pin

2. **Flywheel Ring Gear Removal**

Special Tools:

- None

- a. Place the flywheel on a solid flat surface.
  - b. Drive ring gear off with a brass drift (A) and hammer.
-

# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Flywheel Ring Gear — Installation

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## Flywheel Ring Gear — Installation

### 1. Flywheel Ring Gear Installation

Special Tools:

- None

Consumables:

- None

#### **IMPORTANT:**

**If flame heat is used, be sure gear is heated uniformly around circumference. DO NOT OVERHEAT. SEE CAUTION. Overheating may also destroy original heat treatment of gear.**

- Heat new ring gear to 148°C (300°F) using either heated oil, oven heat, or flame heat.
  - Install ring gear against shoulder of flywheel.
- Perform [Flywheel — Installation](#) .

Special Tools:

- [JDG1571](#) —Timing Pin

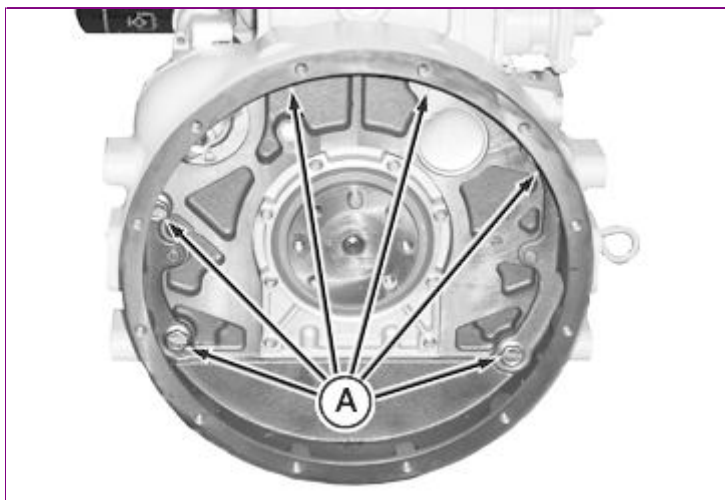
Consumables:

- LOCTITE® 242 Thread Lock and Sealer (Medium Strength), Flywheel Cap Screws

# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Flywheel Housing — Removal

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## Flywheel Housing — Removal



RG17652-UN: Flywheel Housing

### LEGEND:

A - Cap Screws

1. Perform [Flywheel — Removal](#) .

Special Tools:

- [JDG1571](#) —Timing Pin

2. **Flywheel Housing Removal**

Special Tools:

- None

- a. Remove starting motor if desired. Starting motor and flywheel housing may be removed as an assembly.
- b. \_\_\_\_\_



**CAUTION:**

***The flywheel housing is heavy. Plan a proper handling procedure to avoid injuries.***

---

Remove flywheel housing-to-cylinder block cap screws (A). Remove flywheel housing from block.

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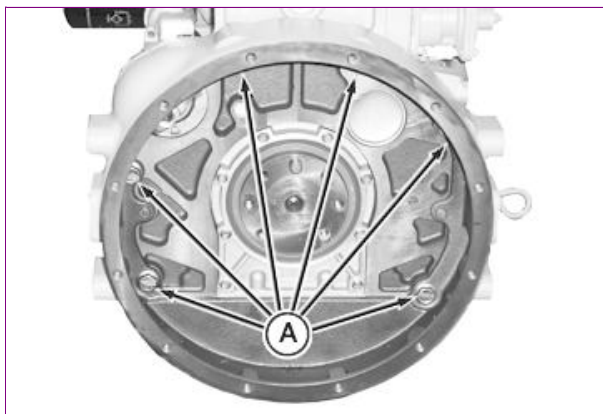
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# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Flywheel Housing — Installation

## Flywheel Housing — Installation



RG17652-UN: Flywheel Housing

### LEGEND:

A - Cap Screws

#### 1. Flywheel Housing Installation

Special Tools:

- None

Consumables:

- None

- Inspect and clean cylinder block and flywheel housing and mating surfaces.
- 



**CAUTION:**

*The flywheel housing is heavy. Plan a proper handling procedure to avoid injuries.*

Install flywheel housing on cylinder block and tighten cap screws (A) to specifications.

Item	Measurement	Specification
Initial Flywheel Housing Cap Screws	Torque	35 N•m (26 lb-ft)
Final Flywheel Housing Cap Screws	Torque	140 N•m (105 lb-ft)

### NOTE:

*Some flywheel housings may use a sheet metal plate as part of the enclosure, install as necessary.*

#### 2. Perform [Flywheel — Installation](#) .

Special Tools:

- [JDG1571](#) —Timing Pin

Consumables:

- LOCTITE ® 242 Thread Lock and Sealant (Medium Strength)

# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Flywheel — Installation

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## Flywheel — Installation

Special Tools:

- [JDG1571](#) —Timing Pin

Consumables:

- LOCTITE® 242 Thread Lock and Sealer (Medium Strength), Flywheel Cap Screws

1. \_\_\_\_\_



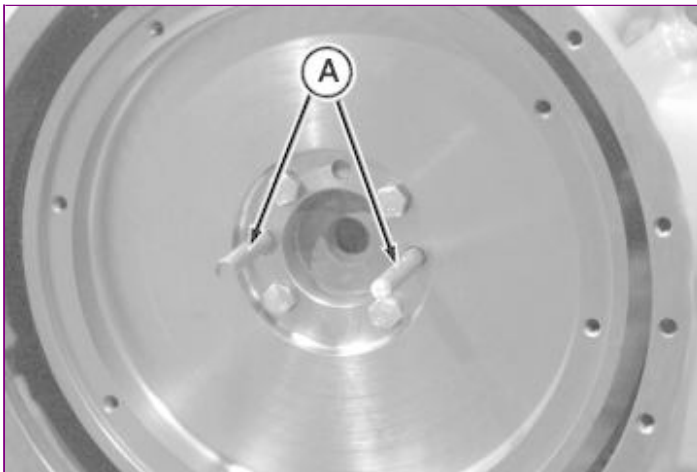
**CAUTION:**

*Flywheel is heavy. Plan a proper handling procedure to avoid injuries.*

---

### **IMPORTANT:**

**Flywheel MUST BE clean and free of any oil, grease or debris.**



RG17650-UN: Flywheel and Guide Studs

### LEGEND:

A - Guide Studs

Install two guide studs (A) in crankshaft cap screw threaded holes. Place flywheel on studs and slide into position against crankshaft.

2. **IMPORTANT:**

**ALWAYS use new flywheel cap screws when flywheel has been removed. Inspect cap screws to insure they have sealant. If required, apply LOCTITE® 242 Thread Lock and Sealer (Medium Strength) to cap screws threads.**

Start cap screws in crankshaft. Do not tighten until guide studs are removed and all cap screws are started. Insert [JDG1571](#) timing pin to prevent crankshaft rotation. Tighten cap screws in a cross-shaped sequence to specifications.

Item	Measurement	Specification
Initial Flywheel Mounting Cap Screws	Torque	30 N•m (20 lb-ft)

Final Flywheel Mounting Cap  
Screws

Torque

110 N•m (80 lb-ft)

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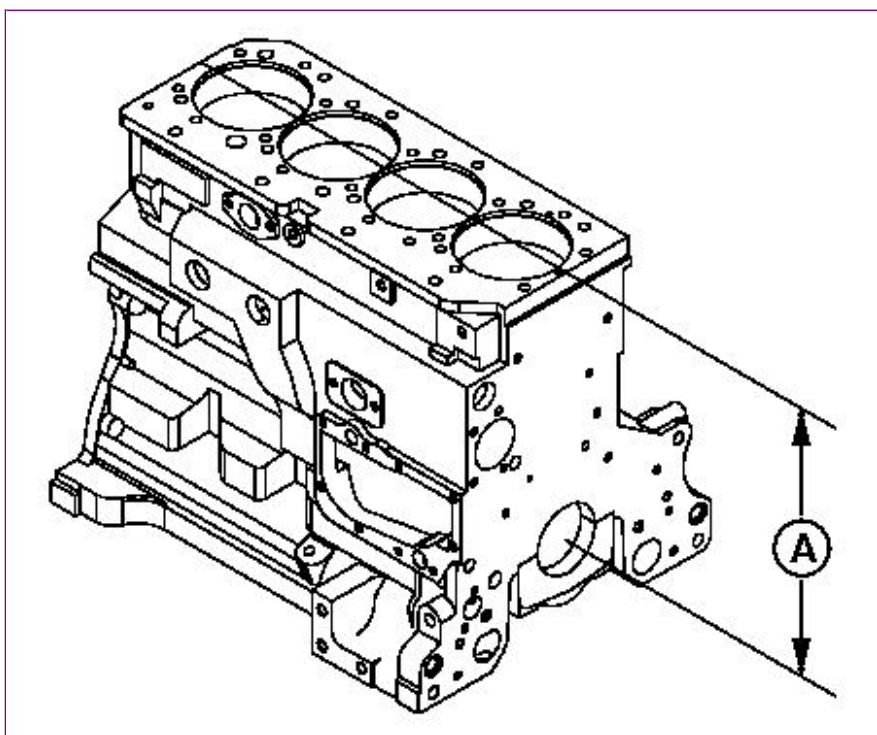
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## CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Assembled ID of Main Bearing Caps — Measurement

### Assembled ID of Main Bearing Caps — Measurement



RG7537-UN: Measuring Assembled Main Bearing Cap ID



RG7405-UN: Cylinder Block to Crankshaft Centerline

#### LEGEND:

A - Top Deck-to-Centerline Bearing Bore

1. Remove bearing inserts from caps and cylinder block. Keep inserts in correct order if they are to be reused.
2. Clean and inspect caps for damage. Small burrs or nicks on flat surfaces may be removed with a file. Use a medium-grit polishing cloth to dress curved bearing surfaces.
3. Install bearing caps (without bearings) in cylinder block. Tighten cap screws to specifications.

Item

Measurement

Specification

Main Bearing Cap Screws                      Torque    80 N·m (59 lb-ft)

4. Measure ID of bearing cap bores.

<b>Item</b>	<b>Measurement</b>	<b>Specification</b>
Crankshaft Main Bearing Bore (Without Bearings)	ID	79.892—79.918 mm (3.1454—3.1464 in.)
Crankshaft Main Bearing Bore Centerline-to-Top Deck	Distance	274.960—275.040 mm (10.8252—10.8283 in.)

5. If bearing caps are damaged or bore is not within specification, replace cylinder block.

# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Essential, Recommended and Fabricated Tools For This Group

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## Essential, Recommended and Fabricated Tools For This Group

*NOTE:*

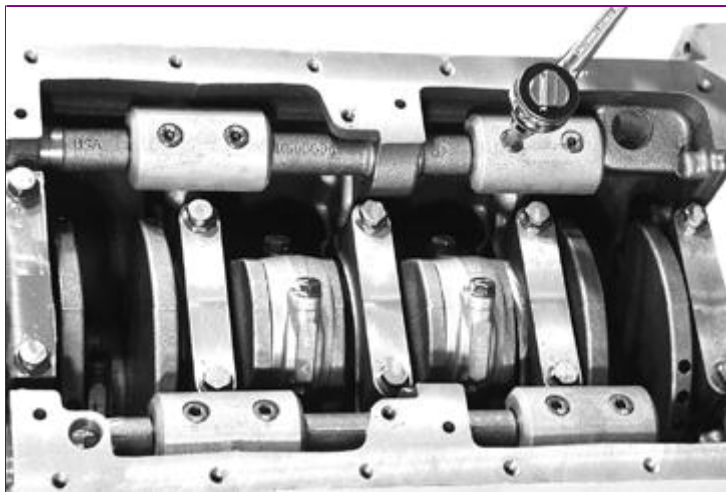
*Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).*

- [JDG1691](#) —Balancer Shaft Bushing Service Set
- [JDG1571](#) —Timing Pin
- [JDG1694](#) —Camshaft Bushing Service Set
- [JDG1678](#) —Hydraulic Lifter Bleeddown Tool

## CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Balancer Shafts — Removal (If Equipped)

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### Balancer Shafts — Removal (If Equipped)



RG13037-UN: Balancer Weights Removal



RG13039-UN: Balancer Shaft Removal

1. Drain engine oil and engine coolant.
2. Perform [Fan Assembly — Removal](#) .

Special Tools:  
• None

3. Perform [Fan and Alternator Belt — Removal](#) .

Special Tools:  
• None

4. Perform [Fan Pulley — Removal](#) .

Special Tools:  
• None

5. Perform fan bearing removal. See:

[Fan Bearing \(Standard-Duty\) — Removal](#) .

Special Tools:

- [JDG1679](#) —Fan Bearing Remover & Installer Kit
- [JDG10409](#) —Wrench Adapter

or

[Fan Bearing \(Heavy-Duty\) — Removal](#) .

Special Tools:

- [JDG10409](#) —Wrench Adapter

6. Remove the idler pulley below the alternator. See:

[Idler Pulley\(s\) with Lift Strap — Removal](#) .

Special Tools:

- None

7. Perform [Automatic \(Spring\) Belt Tensioner — Removal](#) .

Special Tools:

- None

8. Perform [Coolant Pump — Removal](#) .

Special Tools:

- None

9. Perform [Crankshaft Pulley/Damper — Removal](#) .

Special Tools:

- [JDG1571](#) —Timing Pin

10. Perform [Oil Pan — Removal](#) .

Special Tools:

- None

11. Perform [Oil Pick-up Tube Assembly — Removal](#) .

Special Tools:

- None

12. Perform [Timing Gear Cover — Removal](#) .

Special Tools:

- None

13. **Balancer Shafts Removal**

Special Tools:

- None

- a. Rotate crankshaft until balancer weight cap screws point straight down into the oil pan.
- b. Remove weights from balancer shafts.

**IMPORTANT:**

**Identify left and right balancer shafts for correct assembly. Permanently mark a letter “R” or letter “L” on the thrust plate for identification.**

- c. Remove two cap screws from balancer shaft thrust plate.

*NOTE:*

*When removing balancer shafts, use caution to insure shaft journals and bushings are not damaged.*

- d. Carefully remove balancer shafts.



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# CTM101019 - PowerTech™ E 2.4L and 3.0L Diesel Engines Balancer Shaft Bushings and Journals — Inspection and Measurement

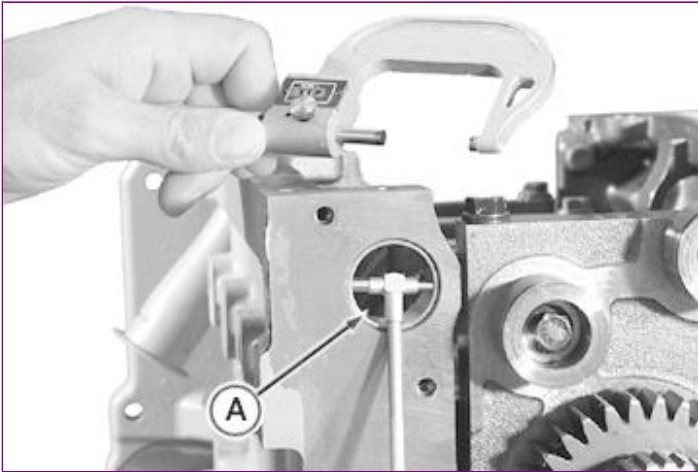
## Balancer Shaft Bushings and Journals — Inspection and Measurement

Special Tools:

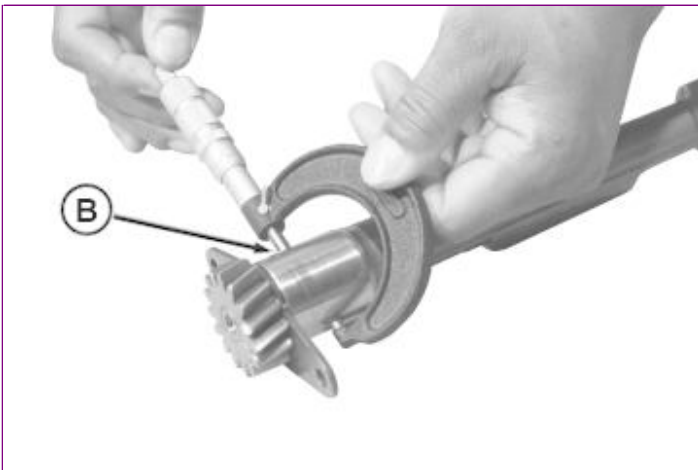
- None

Consumables:

- None



RG17353-UN: Balancer Shaft Bushing Bores Measurement



RG17354-UN: Balancer Shaft Journal OD Measurement

### LEGEND:

- A - Bushing ID
- B - Journal OD

1. Inspect, measure and record bushing ID (A) at all locations.
2. Measure balancer shaft journal OD (B). Difference between journal OD and bushing ID is oil clearance.

If oil clearance is not within specification, install new bushings and, if necessary, new balancer shaft.

Item	Measurement	Specification
Balancer Shaft Bushing (New)	ID	30.038—30.104 mm (1.1826—1.1852 in.)

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