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## Mercury Diesel 2.8L/4.2L (Tier 2) Front Pulley Torque, Engine Compression Testing, and Turbocharger Torque Specification

### Models Affected

Models Covered	Serial Number or Year
Mercury Diesel 2.8L	88300000–88310997
Mercury Diesel 4.2L	88400000–88419999

### Scope

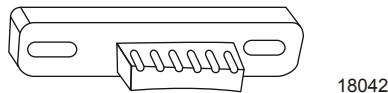
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### Situation

The installation procedure and tightening torques for the front pulley on these engines, and the torque specification on the turbocharger flange nuts have been revised. In lieu of what is shown in the engine service manual, 90-866941, please refer to the revised steps shown below. In addition, a new part number for the engine compression tester is also provided.


### Mercury Diesel 2.8L

1. Install the flywheel holder tool, part number 91-895472, in place of the starter motor.



**Prevents crankshaft rotation during certain service procedures; used only with the starter removed**

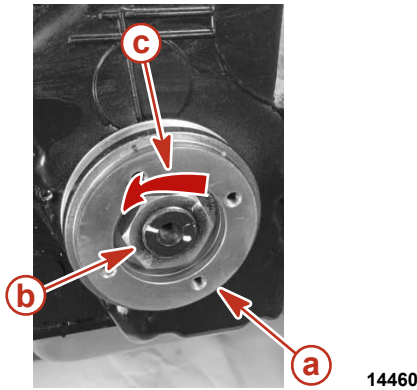
2. Apply lubricant to the threads of the left-hand thread crankshaft pulley nut and on the surface of the pulley nut that contacts the crankshaft pulley.

Tube Ref No.	Description	Where Used	Part No.
 113	Loctite Moly Paste (molybdenum disulfide grease)	Threads on the left-hand thread crankshaft pulley nut and on the crankshaft pulley contact side	Obtain Locally

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- Install the left-hand thread crankshaft pulley nut. Tighten the nut to the specified torque.



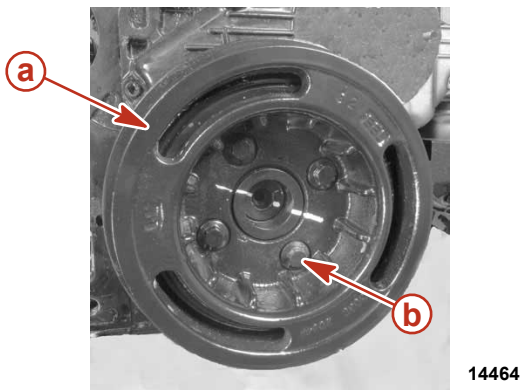
- a - Crankshaft pulley
- b - Left-hand thread crankshaft pulley nut
- c - Direction of torque

Description	Nm	lb-in.	lb-ft
Crankshaft pulley nut, <b>left-hand thread</b>	400	-	295

- Loosen the nut and tighten the nut to the specified torque.

Description	Nm	lb-in.	lb-ft
Crankshaft pulley nut, <b>left-hand thread</b>	600	-	443

- Install the crankshaft damper. Tighten the four crankshaft damper screws to the specified torque.



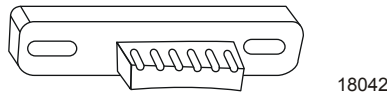
- a - Crankshaft damper
- b - Crankshaft damper screw (4)

Description	Nm	lb-in.	lb-ft
Crankshaft damper screw	32.4	-	24

- Remove the flywheel holder tool.

## Mercury Diesel 4.2L

- Install the flywheel holder tool, part number 91-895472, in place of the starter motor.




**Prevents crankshaft rotation during certain service procedures; used only with the starter removed**

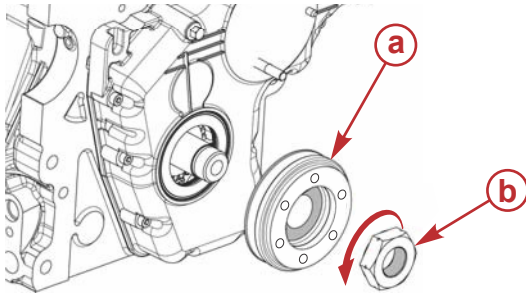
- Apply lubricant to the threads of the left-hand thread crankshaft pulley nut and on the surface of the pulley nut that contacts the crankshaft pulley.

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Tube Ref No.	Description	Where Used	Part No.
 113	Loctite Moly Paste (molybdenum disulfide grease)	Threads on the left-hand thread crankshaft pulley nut and on the crankshaft pulley contact side	Obtain Locally

- Install the left-hand thread crankshaft pulley nut. Tighten the nut to the specified torque.



- a - Crankshaft pulley hub
- b - Crankshaft pulley nut, left-hand thread

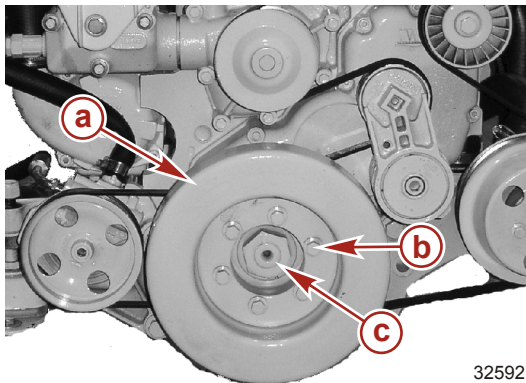
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Description	Nm	lb-in.	lb-ft
Crankshaft pulley nut, <b>left-hand thread</b>	400	–	295

- Loosen the nut and tighten the nut to the specified torque.

Description	Nm	lb-in.	lb-ft
Crankshaft pulley nut, <b>left-hand thread</b>	600	–	443

- Install the crankshaft damper. Tighten the six crankshaft damper screws to the specified torque.



- a - Crankshaft damper
- b - Crankshaft damper screw (6)
- c - Crankshaft pulley nut

32592

Description	Nm	lb-in.	lb-ft
Crankshaft damper screw	32.4	–	24

- Remove the flywheel holder tool.

## Engine Compression Testing

A loss of engine compression causes loss of power, increased fuel consumption, rough idle, hard starts, exhaust smoke, and engine overheating.

- Start the engine and allow it to reach normal operating temperature.
- Stop the engine and shut off the fuel supply.
- Ensure that the battery is fully charged.  
**IMPORTANT: To achieve the cranking RPMs needed (300 RPM minimum) for a proper compression test, it will be necessary to remove all the injectors before testing.**
- See **Section 5D, 90-866941 November 2007—Fuel Injectors** of the **2.8 and 4.2 Diesel Engine Sterndrive and Inboard Service Manual**. While observing the precautions listed, remove all the fuel injectors.
- Clean the injector bore and install the compression tester adapter tool.

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<b>Compression Tester Adapter Tool</b>	<b>8M0097310</b>
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6. Install the injector clamp. Tighten the clamp to the specified torque.

Description	Nm	lb-in.	lb-ft
Injector clamp	24	–	18

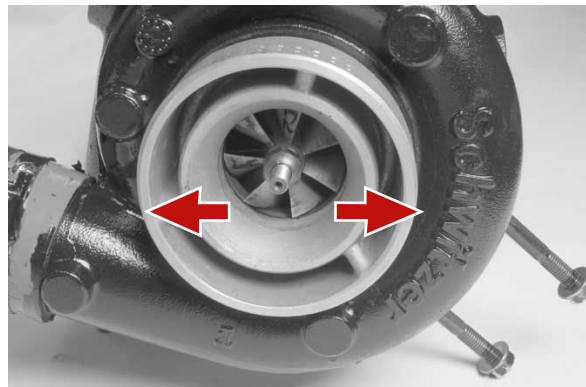
7. Connect the compression gauge to the compression tester adapter tool and set the gauge to zero "0" reading.
8. Operate the starter. The engine should be cranking at approximately 300 RPM minimum.
9. Check the compression gauge reading and compare to the following specifications.

Engine compression—2.8L and 4.2L	
Compression at approximately 300 RPM minimum	30–32 bar (435–464 psi)
Pressure difference between cylinders	500 kPa (72 psi) maximum

10. Remove the compression gauge and the compression tester adapter tool.
11. Readings lower than specified or pressure differences between cylinders greater than specified indicate engine problems exist (such as faulty rings, valves, cylinders, and pistons). See the appropriate sections. Repair as needed.
12. If readings are within specifications, install the injectors in the cylinder heads from which they were removed previously.
13. Purge the air from the injectors.

## Turbocharger Torque Specification

1. Replace the turbocharger if the blades rub or do not rotate freely.



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### Checking radial (side) play

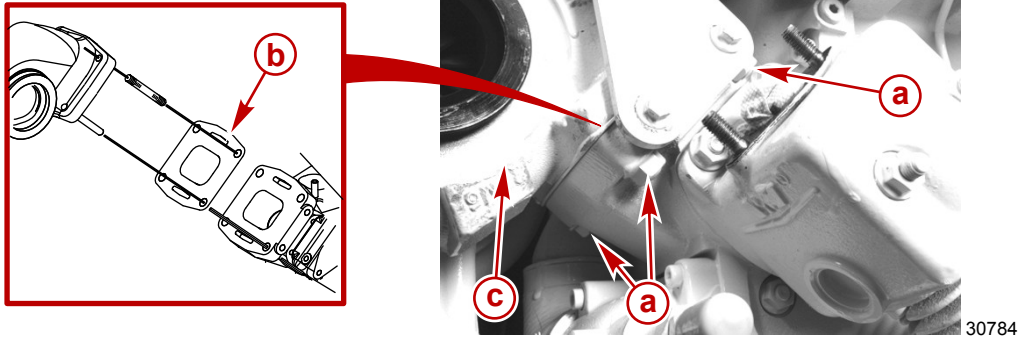
**IMPORTANT:** When installing the turbocharger, it may be necessary to turn the intake and exhaust housings to line up with the intake air duct and exhaust manifold on the engine.

2. Install a new gasket on the intake and exhaust manifold.

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3. Install the turbocharger on the intake and exhaust manifold. Tighten the flange nuts evenly, in a diagonal pattern, to the specified torque.



- a - Flange nut (4)
- b - Gasket
- c - Turbocharger

Description	Nm	lb-in.	lb-ft
Turbocharger flange nut	49	-	36

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