

## Feeler Gauge

### Cleaning

1.

Clean the exhaust manifold using a suitable solvent. Use a plastic scraping tool to clean the gasket sealing surfaces.

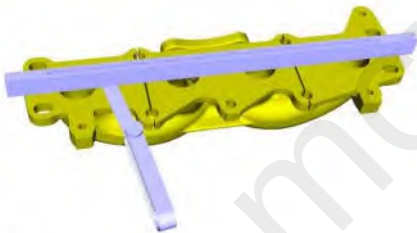
### Inspection

 **NOTE:** Use a Straightedge that is calibrated by the manufacturer to be flat within 0.005 mm (0.0002 in) per running foot of length, such as Snap-On® GA438A or equivalent. For example, if the Straightedge is 61 cm (24 in) long, the machined edge must be flat within 0.010 mm (0.0004 in) from end to end.

 **NOTE:** New exhaust manifold gaskets, studs, nuts and/or bolts must be installed when an exhaust manifold is serviced.

1.

Using the Straightedge and a Feeler Gauge Set, check the exhaust manifold sealing surface for warpage. If the warpage is greater than 0.76 mm (0.0299 in), install a new exhaust manifold. Use the General Equipment: Feeler Gauge



E148369

## GENERAL PROCEDURES > FLYWHEEL INSPECTION - 3.7L DURATEC (227KW 301PS)

### Special Tool(s) / General Equipment



100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge



303-103 (T74P-6375-A) Holding Tool, Flywheel T74P-77000-A TKIT-2009TC-F

## Inspection



*NOTE: Do not clean the dual mass flywheel with compressed air.*



*NOTE: Do not clean the dual mass flywheel with any kind of fluid, use a dry cloth only or damage to the dual mass flywheel may occur.*



*NOTE: Do not clean the gap between the primary and secondary mass. Only clean the bolt connection surface and the clutch surface or damage to the dual mass flywheel may occur.*



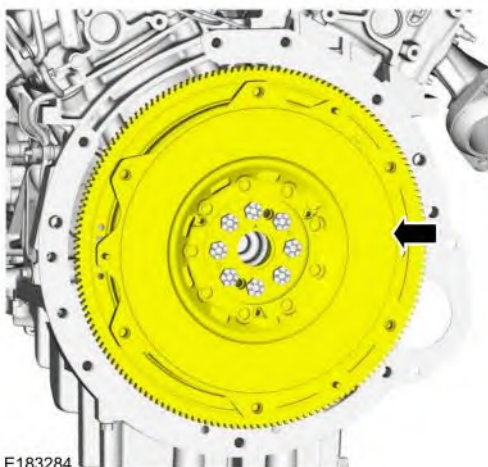
*NOTE: The dual mass flywheel normally has up to a total of 14 degrees (6.5 ring gear teeth) maximum rotational freeplay between the primary (bolted to crankshaft) and the secondary mass (clutch disc face).*



*NOTE: The dual mass flywheel cannot be machined.*

1.

With the dual mass flywheel installed on the engine, inspect the dual mass flywheel surface for scoring, cracks, discoloration or damage. Check for contamination from grease, oil or fuel. If any of these conditions exist, install a new dual mass flywheel.



2.

Inspect the dual mass flywheel friction control plate plastic piece between the primary and secondary mass for damage or melting and install a new dual mass flywheel if necessary. Inspect the dual mass flywheel hub bushing for wear and install a new dual mass flywheel if necessary.



 **NOTE:** The dual mass flywheel rotational freeplay inspection cannot be carried out if the friction control plate is damaged.

3.

Rotate the secondary mass counterclockwise and place a reference mark on the primary and secondary mass of the dual mass flywheel.



4.

Using light hand pressure, rotate the secondary mass clockwise to the end of the freeplay. Place a 2nd reference mark on the primary mass of the dual mass flywheel, in line with the reference mark on the secondary mass.



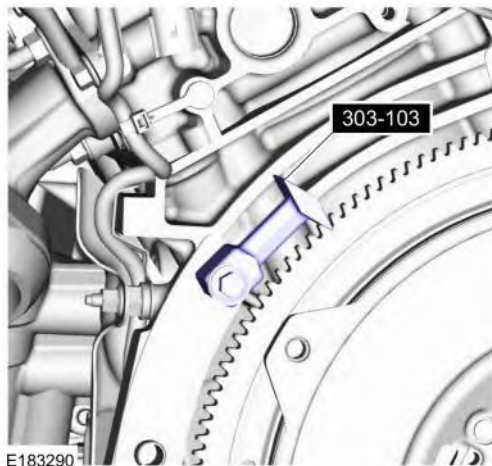
5.

Measure the rotational freeplay between the 2 reference marks on the primary mass of the dual mass flywheel. If the rotational freeplay exceeds 14 degrees (6.5 ring gear teeth), install a new dual mass flywheel.



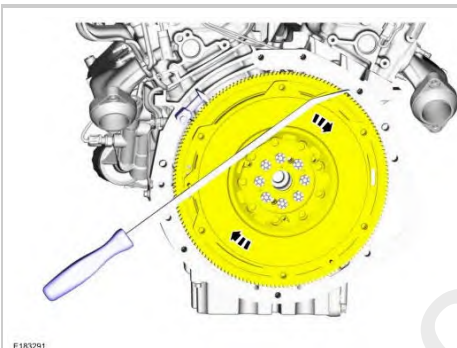
6.

Install Special Service Tool: 303-103 (T74P-6375-A) Holding Tool, Flywheel.



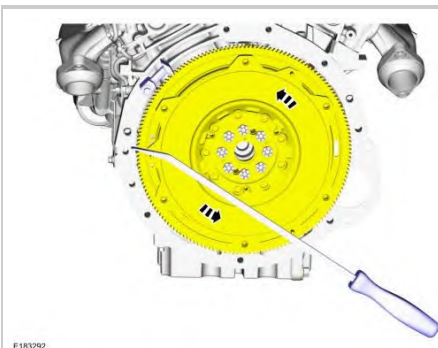
7.

Using a suitable long screwdriver or bar, firmly rotate the secondary mass clockwise. The secondary mass should begin to engage the internal spring past the freeplay movement of 14 degrees (6.5 ring gear teeth) maximum. The secondary mass should continue to rotate and engage the internal spring with increasing spring pressure. If the secondary mass does not rotate, install a new dual mass flywheel.



8.

Using a suitable long screwdriver or bar, firmly rotate the secondary mass counterclockwise. The secondary mass should begin to engage the internal spring past the freeplay movement of 14 degrees (6.5 ring gear teeth) maximum. The secondary mass should continue to rotate and engage the internal spring with increasing spring pressure. If the secondary mass does not rotate, install a new dual mass flywheel.



9.

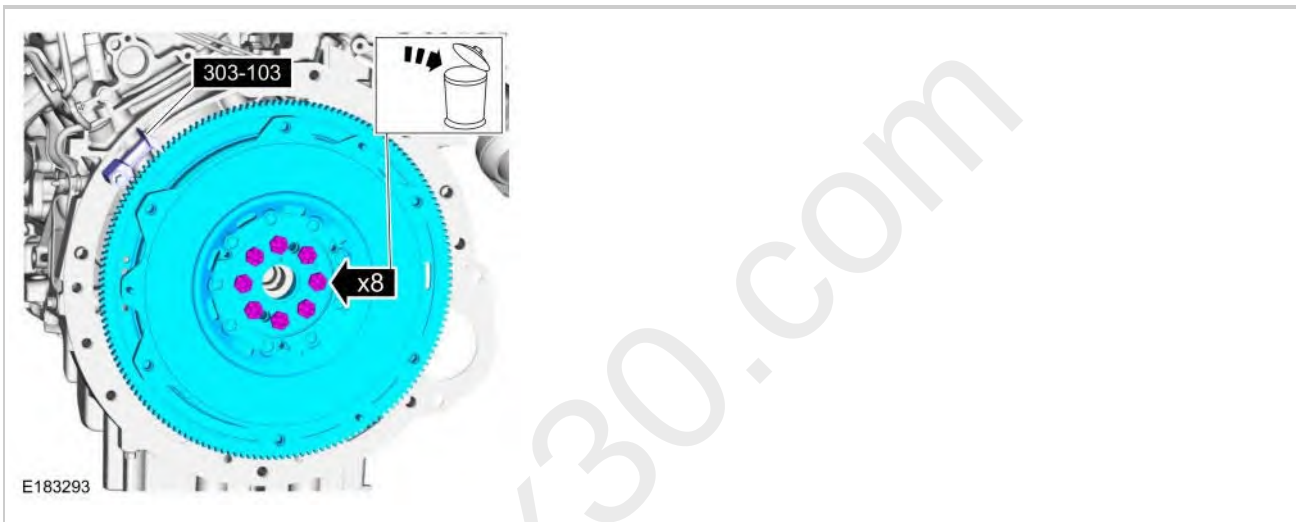
Remove the bolts and the dual mass flywheel. Discard the flywheel bolts.

Inspect the dual mass flywheel crankshaft mounting flange for residual thread locking compound or rust and clean as necessary.

 **NOTE:** Blocks must be placed under the dual mass flywheel to make sure it is level and stable.

Place the flywheel on a firm and level surface.

Remove Special Service Tool: 303-103 (T74P-6375-A) Holding Tool, Flywheel.

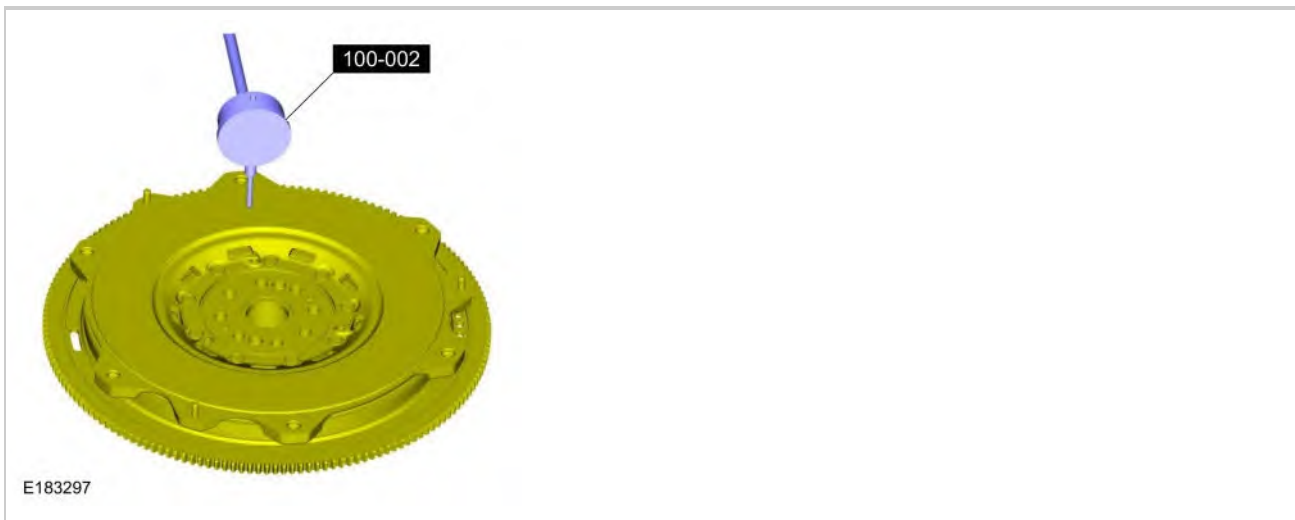


10.

Using the special tool, place a dial indicator gauge at a point on the outer upper surface of the secondary mass. Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.

Using light hand pressure, press downward at the opposite point on the outer upper surface of the secondary mass and note the deflection on the dial indicator gauge.

Repeat this measurement at 45 degree intervals around the dual mass flywheel and note any deflection. Some axial movement of the secondary mass flywheel is normal, if the deflection exceeds 1.1 mm (0.043 in) at any point, install a new dual mass flywheel.



11.

1.

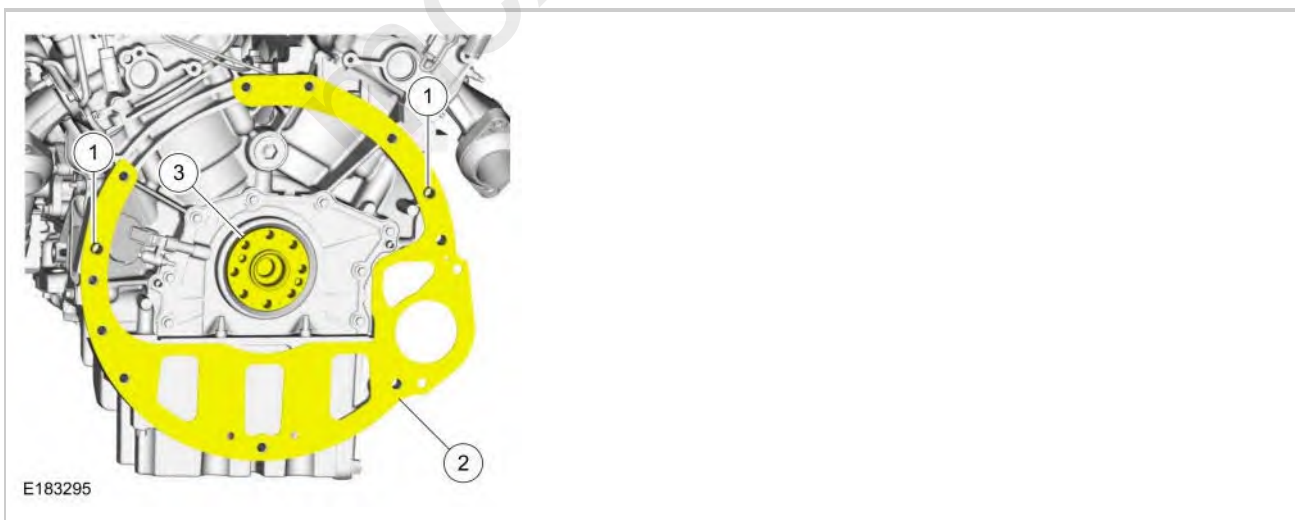
Inspect the rear face of the engine block. Make sure that the 2 engine dowel pins are correctly installed and are not damaged, install new dowel pins as necessary.

2.

Inspect the engine block rear spacer plate for damage or warping and install a new plate as necessary.

3.

Inspect the crankshaft flange for residual thread lock compound or rust, and clean as necessary.

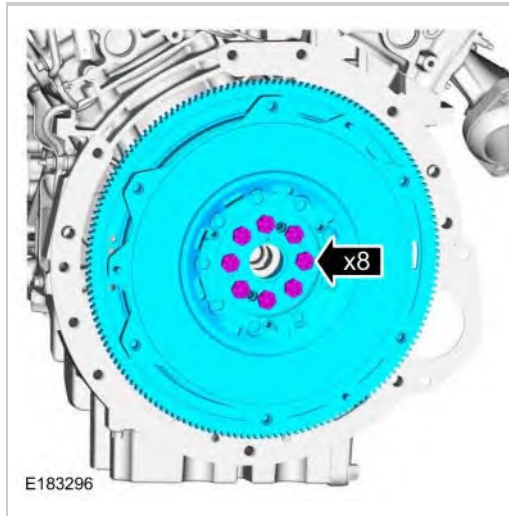


12.

Inspect the transmission mounting face. Inspect the 2 dowel pin holes so that they are not elongated or damaged.

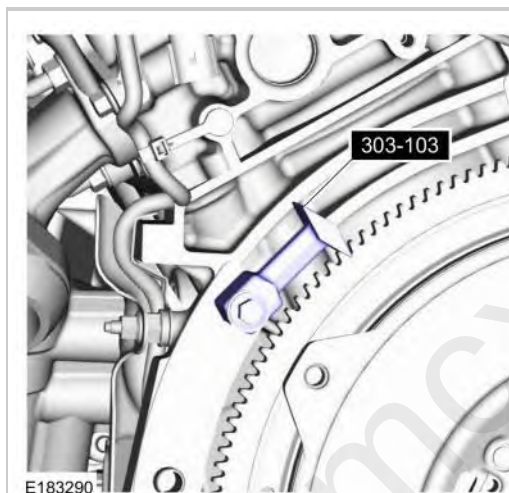
13.

Install the dual mass flywheel and new bolts finger tight.



14.

Install Special Service Tool: 303-103 (T74P-6375-A) Holding Tool, Flywheel.



15.

Tighten the bolts in the sequence shown below.

Torque

: 59 lb.ft (80 Nm)