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2016 Ford F-250 Super Duty Service and Repair Manual

Go to manual page

Sample

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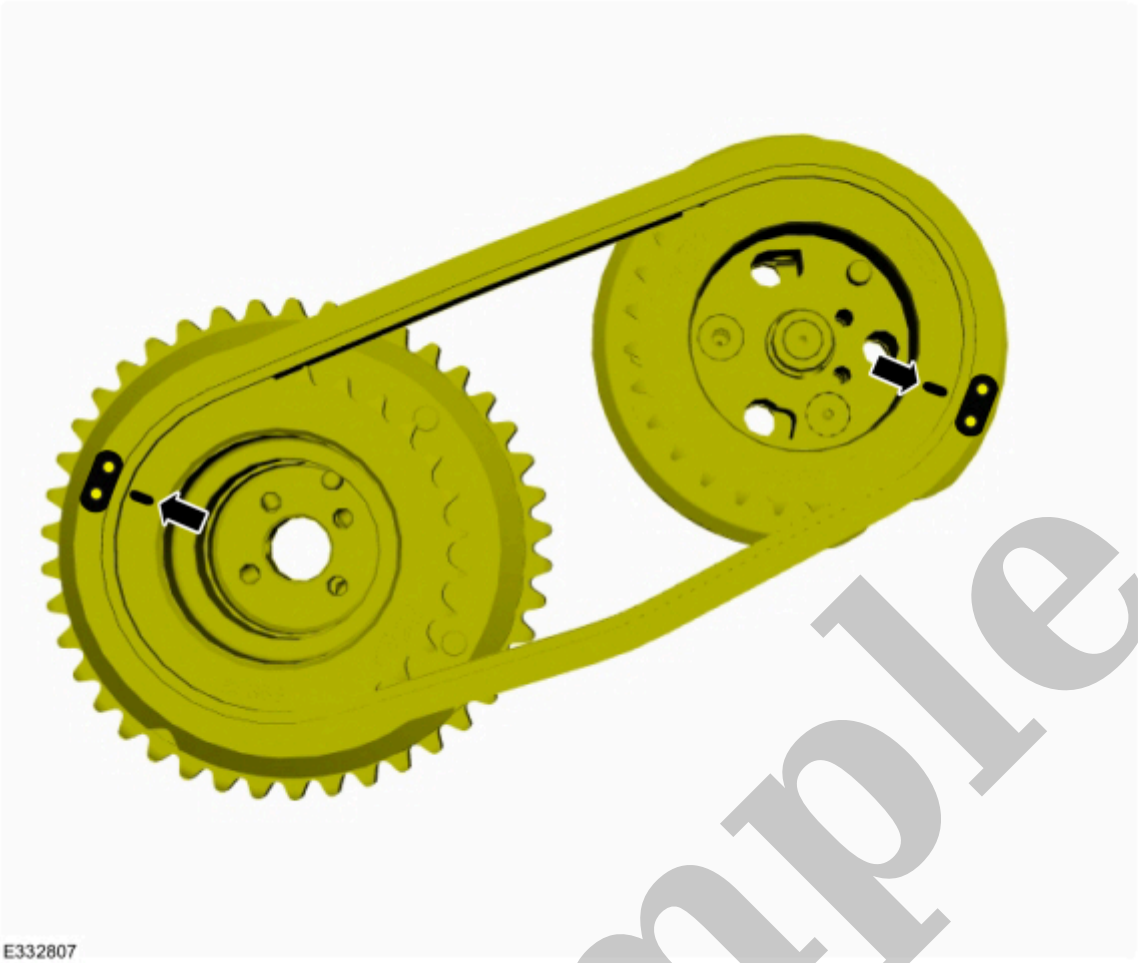
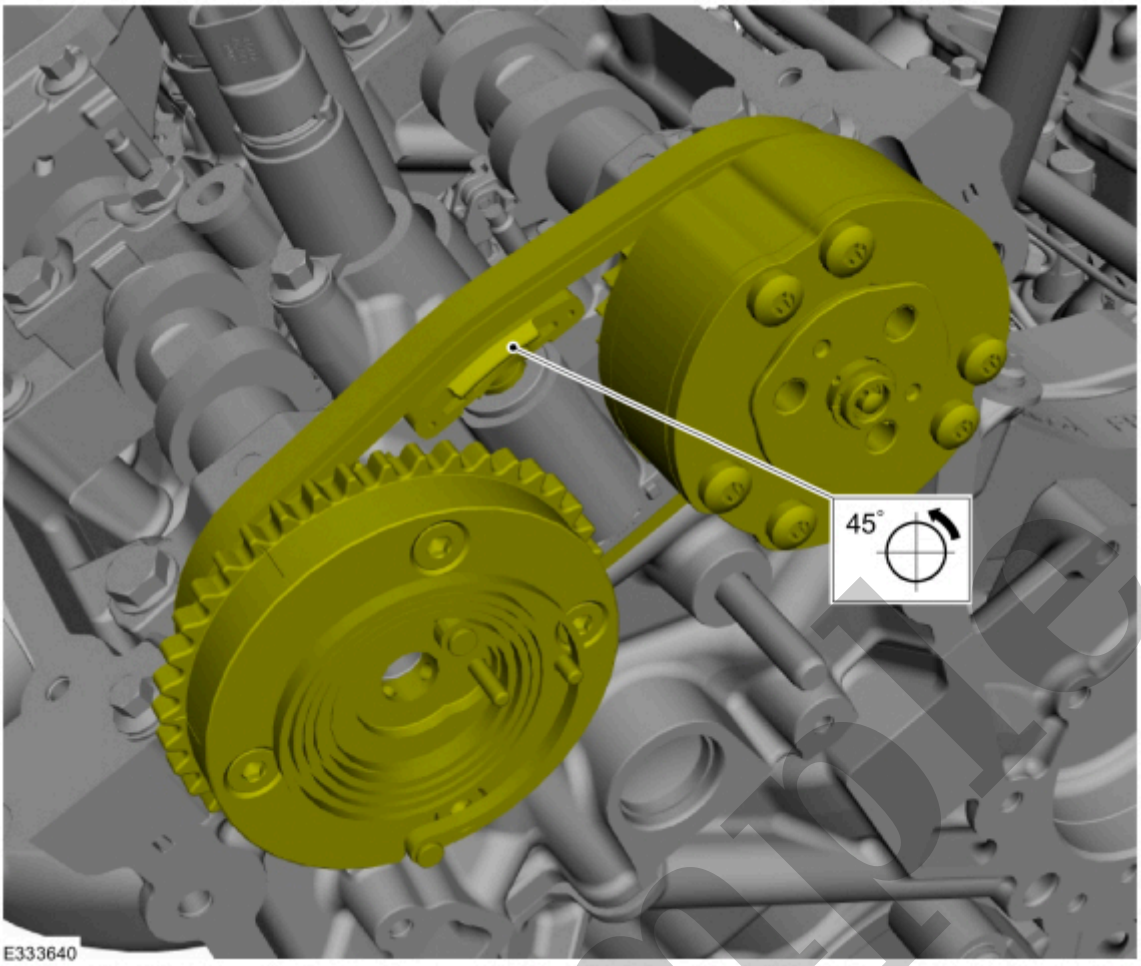


Sample

Click here to learn about symbols, color coding, and icons used in this manual.

18. Install the VCT (variable camshaft timing) assemblies and the secondary timing chain onto the camshafts. The timing mark on the exhaust VCT (variable camshaft timing) assembly should be in the position shown.



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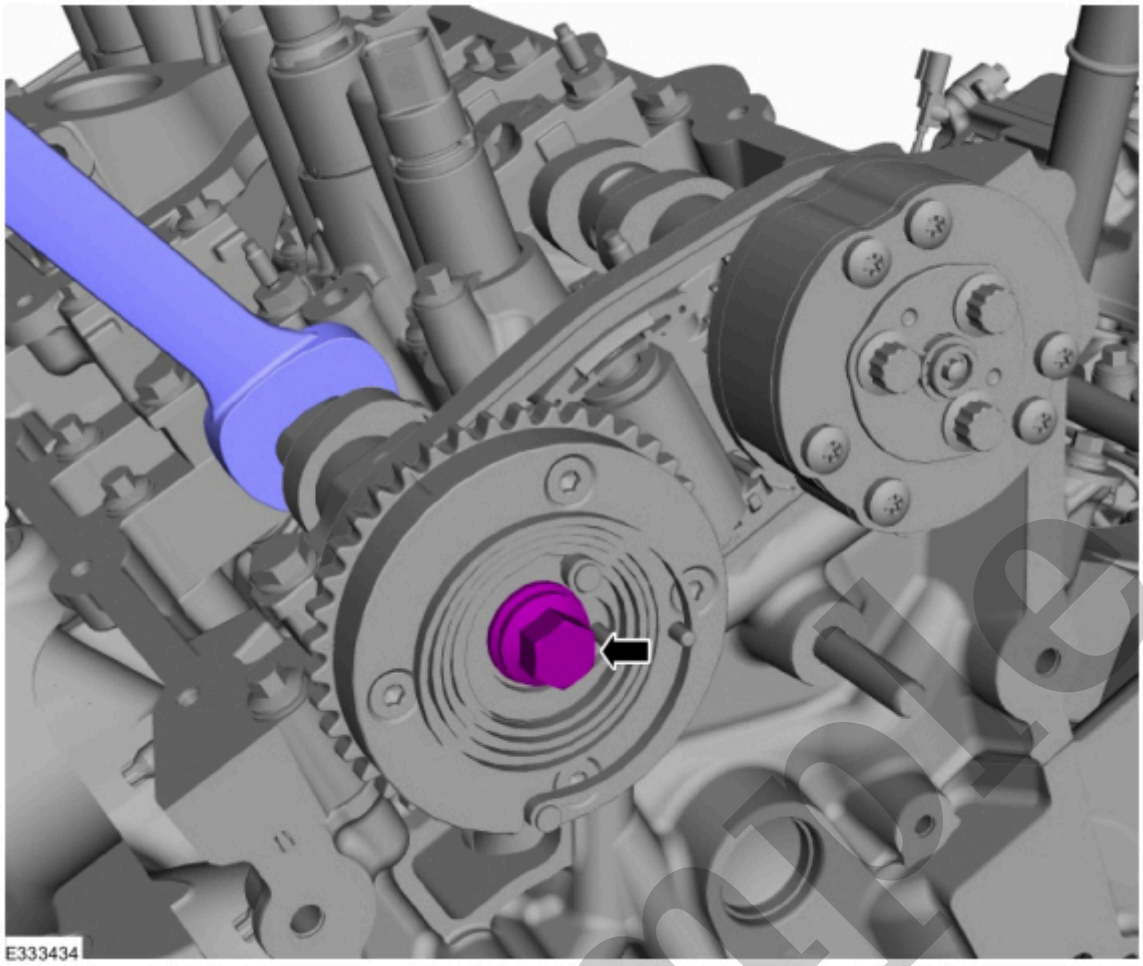
20. **NOTE**

Do not tighten the bolts at this time.

- Install a new exhaust VCT (variable camshaft timing) assembly bolt.
- Install new intake VCT (variable camshaft timing) assembly bolts.

Sample



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22. **NOTE**

Use a wrench on the flats of the camshaft to hold the camshafts while tightening the VCT (variable camshaft timing) assembly bolts.

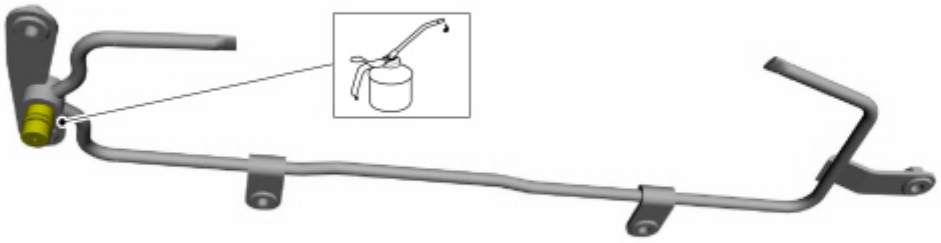
Tighten the intake VCT (variable camshaft timing) assembly bolts.

Torque :

Stage 1: 133 lb.in (15 Nm)

Stage 2: 90°

Sample



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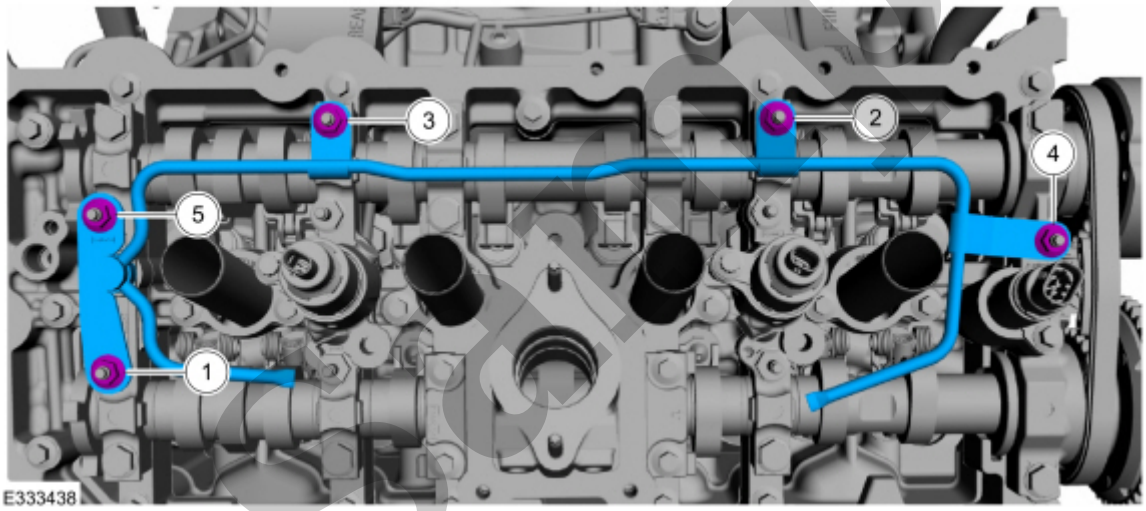
25. Install the oil tube and tighten the fasteners in sequence.

Torque : 89 lb.in (10 Nm)



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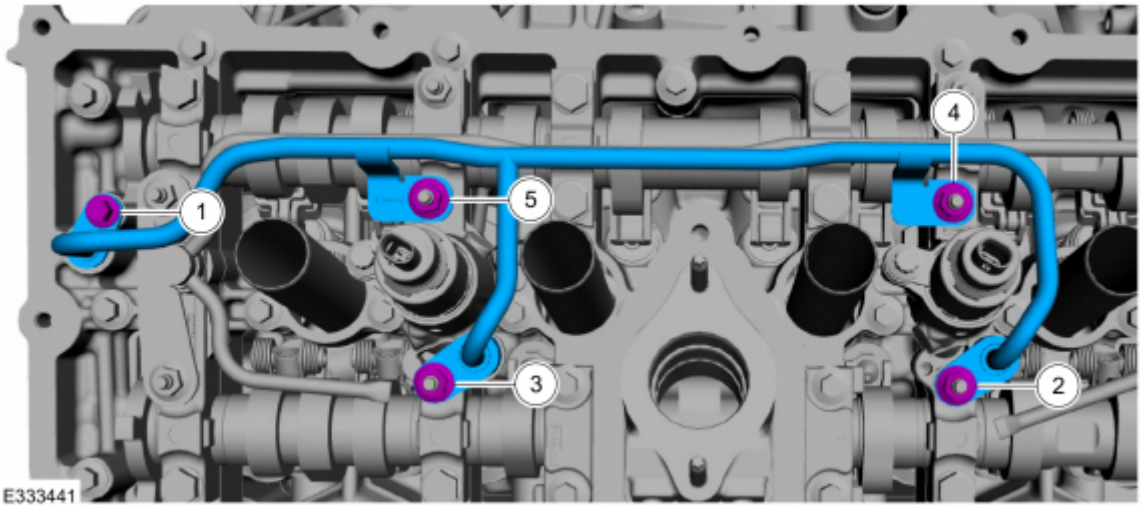
26. Inspect the seals. If damaged, discard the oil tube assembly.

Sample



Click here to learn about symbols, color coding, and icons used in this manual.

29. Install the RH (right-hand) timing chain.

    Refer to: Timing Chain(303-01E Engine - 5.0L 32V Ti-VCT, Removal and Installation).

30. Road test the vehicle.

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Sample

Name	Specification	Fill Capacity
Motorcraft® SAE 5W-30 Synthetic Blend Motor Oil XO-5W30-Q1SP	WSS-M2C961-A1	Service fill with oil filter 7.75 qt (7.33 L)

Torque Specifications

Engine oil drain plug: 19 lb.ft (26 Nm)

Oil Pressure

Item	Specification
Oil pressure @ 1,500 rpm with engine oil temperature between 121.9 –175.9 °F (50 –80 °C)	26.1 –37.7 psi (180 –260 kPa)

Cylinder Head and Valve Train

Item	Specification
Combustion chamber volume	3.33 –3.51 in³ (54.5 –57.5 cm³)
Valve stem diameter - intake	0.2352 –0.2360 in (5.975 –5.995 mm)
Valve stem diameter - exhaust	0.2343 –0.2350 in (5.95 –5.97 mm)
Valve stem-to-guide clearance - intake	0.0007 –0.0027 in (.019 –.069 mm)
Valve stem-to-guide clearance - exhaust	0.0017 –0.0037 in (.044 –.094 mm)
Valve head diameter - intake	1.51 in (38.3 mm)
Valve head diameter - exhaust	1.27 in (32.2 mm)

Sample

Valve spring installed force - intake	354 N
Valve spring installed force - exhaust	354 N
Roller follower ratio - intake (non switching)	2.012:1
Roller follower ratio - intake (switching)	2.012:1
Roller follower ratio - exhaust (non switching)	2.001:1
Roller follower ratio - exhaust (switching)	2.001:1
Cylinder head gasket surface flatness	0.025 mm (0.001 in) in any 25 mm (1 in) x 25 mm (1 in) area; 0.050 mm (0.002 in) in any 150 mm (6 in) x 150 mm (6 in) area; 0.1 mm (0.004 in) overall

Hydraulic Lash Adjuster

Item	Specification
Diameter — switching (intake and exhaust)	0.472 in (12 mm)
Diameter — non switching (intake and exhaust)	0.472 in (12 mm)
Clearance-to-bore (switching and non switching)	0.0004 –0.0020 in (.01 –.051 mm)
Hydraulic leakdown rate — switching	0.45-3 seconds [a]
Hydraulic leakdown rate — non switching	0.45-3 seconds [a]
Collapsed lash adjuster gap — switching	0.0205 –0.0283 in (.52 –.72 mm)
Collapsed lash adjuster gap — non switching	0.0205 –0.0283 in (.52 –.72 mm)

Sample

Head gasket surface flatness	0.0254 mm (0.001 in) across any 38.1 mm (1.5 in) square

Crankshaft

Item	Specification
Main bearing journal diameter	2.657 –2.658 in (67.481 –67.505 mm)
Main bearing journal maximum taper	0.0002 in (.004 mm)
Main bearing journal maximum out-of-round	0.0002 in (.006 mm)
Main bearing journal-to-main bearing clearance	0.0010 –0.0018 in (.025 –.045 mm)
Connecting rod journal diameter	2.086 –2.087 in (52.983 –53.003 mm)
Connecting rod journal maximum taper	0.0002 in (.004 mm)
Connecting rod journal maximum out-of-round	0.0002 in (.006 mm)
Crankshaft end play	0.0033 –0.0167 in (.085 –.425 mm)

Piston and Connecting Rod

Item	Specification
Piston diameter - single grade	3.6599 –3.6604 in (92.961 –92.975 mm)
Piston-to-cylinder bore clearance (at grade size) (before Grafal coating)	0.0010 –0.0023 in (.025 –.059 mm)
Piston-to-cylinder bore clearance (at grade size) (with grafal coating)	-0.0002 –0.0011 in (-.005 –.029 mm)
Piston ring end gap - top	0.0079 –0.0118 in (.2 –.3 mm)
Piston ring end gap - intermediate	0.0197 –0.0315 in (.5 –.8 mm)
Piston ring end gap — oil control	0.0059 –0.0177 in (.15 –.45 mm)

Sample

a. Time required for the plunger to leak down 1.6 mm of travel with 222 N force and leakdown fluid in the lash adjuster

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Sample