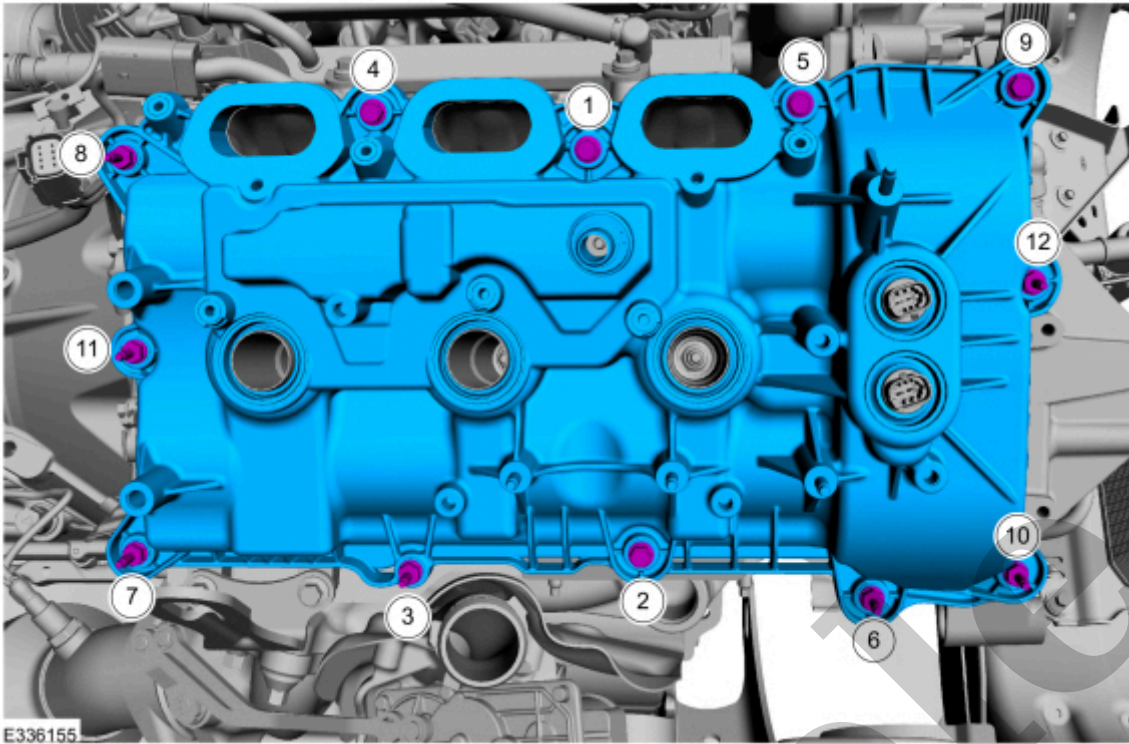


Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

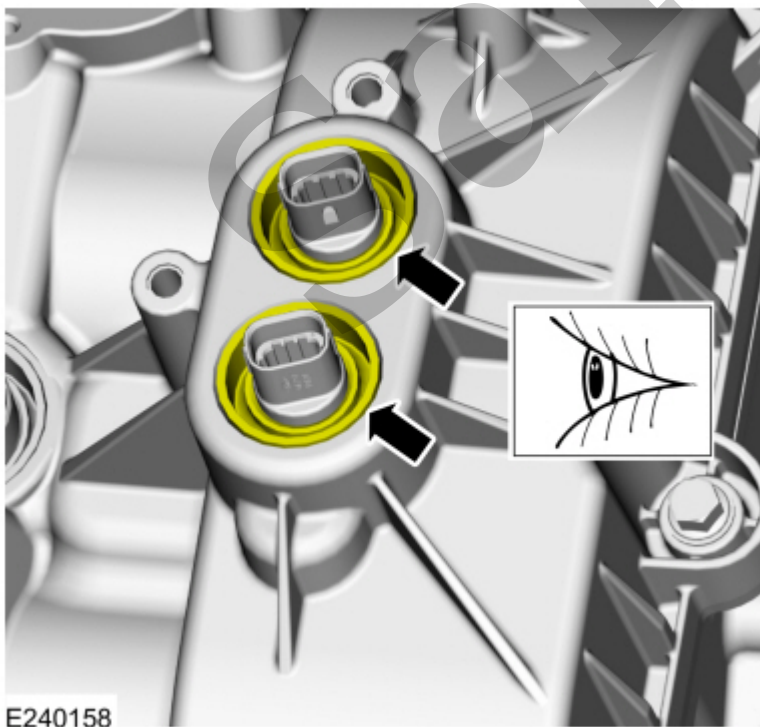
2014 Ford Taurus Service and Repair Manual

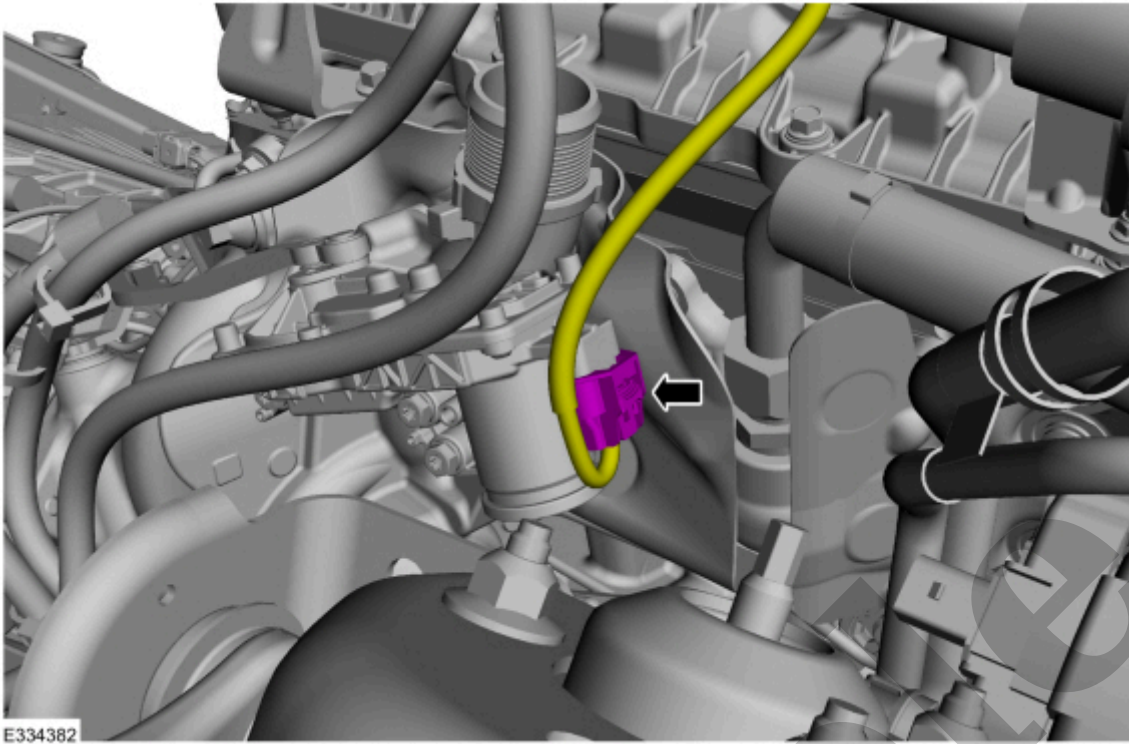
[Go to manual page](#)



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

6. Make sure the VCT (variable camshaft timing) seals in the valve cover are below the top of the VCT (variable camshaft timing) oil control solenoid electrical connector or the VCT (variable camshaft timing) seal may leak oil.





[Click here to learn about symbols, color coding, and icons used in this manual.](#)

9.
 - Position back the wire harness bracket and fasteners.
Torque : 89 lb.in (10 Nm)
 - Position back the wire harness bracket and fasteners.
Torque : 71 lb.in (8 Nm)

Variable Camshaft Timing (VCT) Unit

303-01D Engine - 3.5L V6 PowerBoost (CN)	2022 F-150
Removal and Installation	Procedure revision date: 10/14/2020

Variable Camshaft Timing (VCT) Unit

Removal

NOTICE

During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan, can cause engine failure.

NOTE

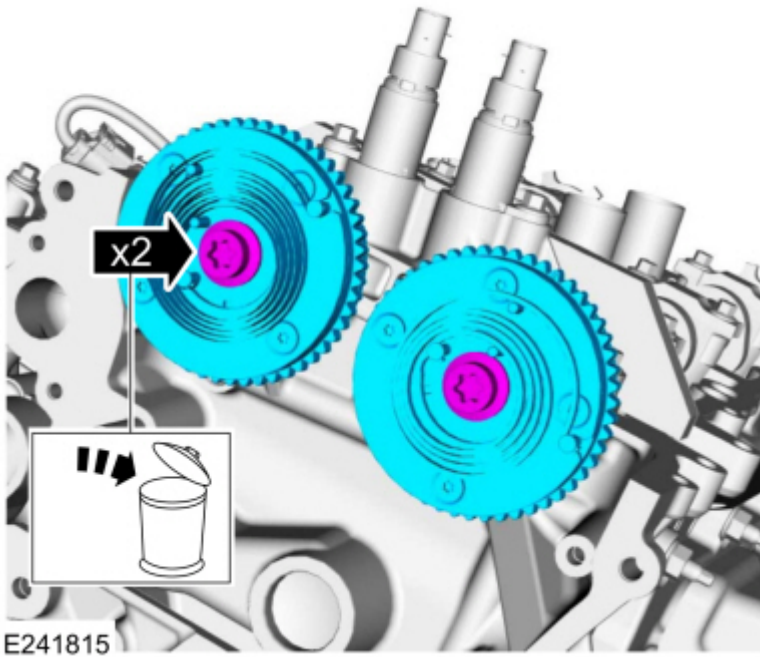
If the RH (right-hand) VCT (variable camshaft timing) units are being serviced at the same time as the LH (left-hand) VCT (variable camshaft timing) units, remove the RH (right-hand) VCT (variable camshaft timing) units first.

RH variable camshaft timing (VCT) unit

1. Remove the RH (right-hand) timing chain.

Refer to: [Timing Chain](#)(303-01C Engine - 3.5L EcoBoost (BM), Removal and Installation).

2. 1. Remove and discard the VCT (variable camshaft timing) unit bolts.
2. Remove the VCT (variable camshaft timing) units.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

Installation

LH variable camshaft timing (VCT) unit

1. Install the VCT (variable camshaft timing) units.
2. Install the new VCT (variable camshaft timing) unit bolts.

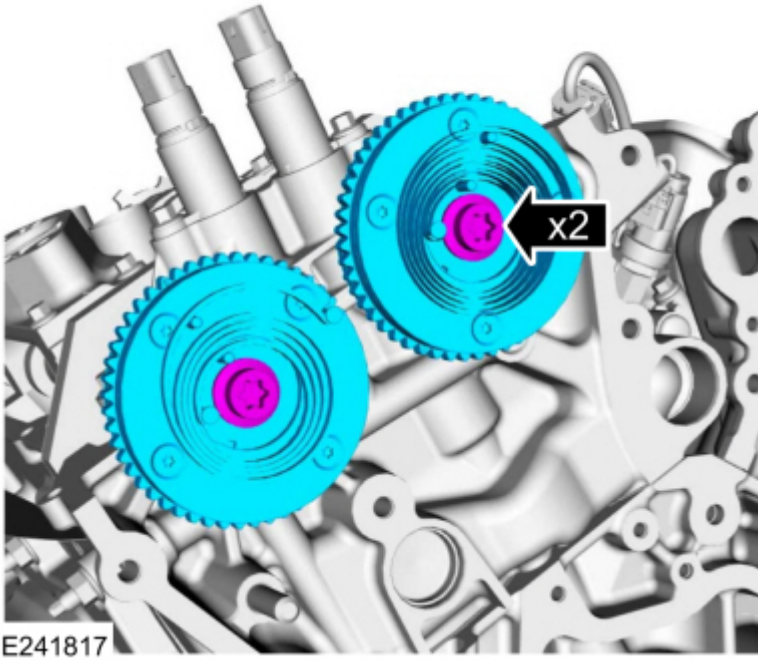
Torque :

Stage 1: 30 lb.ft (40 Nm)

Stage 2: Loosen: 360°

Stage 3: 18 lb.ft (25 Nm)

Stage 4: 150°



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

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

Refer to: [Timing Chain\(303-01C Engine - 3.5L EcoBoost \(BM\), Removal and Installation\)](#).

All vehicles

5. Road test the vehicle.

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Motorcraft® SAE 5W-30 Premium Synthetic Blend Motor Oil (US)	Material : Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil / XO-5W30-Q1SP (WSS-M2C946-B1)
Motorcraft® SAE 5W-30 Super Premium Motor Oil (Canada)	Material : Engine Oil - SAE 5W-30 - Synthetic Blend Motor Oil / XO-5W30-Q1SP (WSS-M2C946-B1)

Engine Oil Capacity

Item	Specification
Service fill including oil filter	6.0 qt (5.7 L)

Oil Pressure

Item	Specification
Oil pressure @ 1,500 rpm with engine oil temperature between 121.9-175.9°F (50-80°C)	20.3 –29.0 psi (140 –200 kPa)

Cylinder Head and Valve Train

Item	Specification
Cylinder head gasket surface flatness	Flat within 0.08 mm (0.003 in) length end to end; flat within 0.05 mm (0.002 in) per area 150 mm (5.91 in) x 150 mm (5.91 in) (or full width); flat within 0.025 mm (0.001 in) per area 25 mm (0.98 in) x 25 mm (0.98 in)
Valve guide bore inner diameter	0.237 –0.238 in (6.014 –6.044 mm)
Valve stem diameter - intake	0.2360 –0.2353 in (5.994 –5.976 mm)
Valve stem diameter - exhaust	0.2343 –0.2350 in (5.951 –5.969 mm)
Valve stem-to-guide clearance - intake	0.0008 –0.0027 in (.02 –.068 mm)

Item	Specification
Theoretical valve lift @ 0 lash - intake	0.394 in (10 mm)
Theoretical valve lift @ 0 lash - exhaust	0.394 in (10 mm)
Lobe lift - intake	0.211 in (5.35 mm)
Lobe lift - exhaust	0.211 in (5.37 mm)
Allowable lobe lift loss	0.0024 in (.062 mm)
Camshaft journal bore inside diameter — 1st journal	1.378 –1.379 in (35.008 –35.032 mm)
Camshaft journal bore inside diameter — intermediate journals	1.128 –1.129 in (28.657 –28.682 mm)
Camshaft bearing outside diameter — 1st journal	1.376 –1.377 in (34.96 –34.98 mm)
Camshaft bearing outside diameter — intermediate journals	1.126 –1.127 in (28.607 –28.633 mm)
Camshaft journal-to-bearing clearance, 1st journal — service limit	0.001 –0.003 in (.028 –.072 mm)
Camshaft journal-to-bearing clearance, intermediate journals — service limit	0.001 –0.003 in (.024 –.075 mm)
Cam Journal runout	0.0016 in (.04 mm)
End play - standard	0.0030 –0.0065 in (.075 –.165 mm)
End play - service limit	0.0075 in (.19 mm)

Hydraulic Lash Adjuster

Item	Specification
Diameter	0.472 –0.472 in (11.989 –12 mm)
Clearance-to-bore	0.000 –0.002 in (.01 –.051 mm)

CKP (crankshaft position) sensor air gap	0.0197 -0.0787 in (.5 -2 mm)
Connecting rod journal maximum out-of-round	0.0002 in (.006 mm)
Crankshaft end play	0.0041 -0.0124 in (.105 -.315 mm)

Piston and Connecting Rod

Item	Specification
Piston diameter (DN) height from top of piston	1.57 in (40 mm)
Piston diameter	3.6388 -3.6394 in (92.426 -92.44 mm)
Piston-to-cylinder bore clearance (at grade size)	0.0024 -0.0037 in (.06 -.094 mm)
Piston ring end gap - compression (top, gauge diameter)	0.0079 -0.0118 in (.2 -.3 mm)
Piston ring end gap - compression (bottom, gauge diameter)	0.0157 -0.0276 in (.4 -.7 mm)
Piston ring end gap — oil ring (steel rail, gauge diameter)	0.0059 -0.0177 in (.15 -.45 mm)
Piston ring groove width - compression (top)	0.0602 -0.0610 in (1.53 -1.55 mm)
Piston ring groove width — compression (bottom)	0.0406 -0.0413 in (1.03 -1.05 mm)
Piston ring groove width - oil ring	0.0799 -0.0807 in (2.03 -2.05 mm)
Piston ring width - upper compression ring	0.0579 -0.0587 in (1.47 -1.49 mm)
Piston ring width - lower compression ring	0.0382 -0.0390 in (.97 -.99 mm)
Piston ring-to-groove clearance (upper and lower compression rings)	0.0016 -0.0031 in (.04 -.08 mm)
Piston pin bore diameter	0.9057 -0.9058 in (23.004 -23.008 mm)
Piston pin diameter	0.9053 -0.9055 in (22.995 -23 mm)
Piston pin length	2.3071 -2.3189 in (58.6 -58.9 mm)



Engine - Vehicles With: Dual Generators

303-01E Engine - 5.0L 32V Ti-VCT	2022 F-150
Assembly	Procedure revision date: 10/27/2021

Engine - Vehicles With: Dual Generators

NOTICE

During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan, can cause engine failure.

NOTE

During engine assembly it may become necessary to check bearing clearances and end play. Refer to Section 303-00.

1. Record the main bearing code found on the front of the engine block.