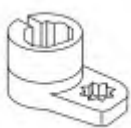


SECTION 303-14: Electronic Engine Controls
REMOVAL AND INSTALLATION

2014 F-150 Workshop Manual
Procedure revision date: 10/25/2013

Engine Control Components — Exploded View, 3.5L GTDI

Special Tool(s)

 ST1447-A	Socket, Exhaust Gas Oxygen Sensor 303-476 (T94P-9472-A)
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool

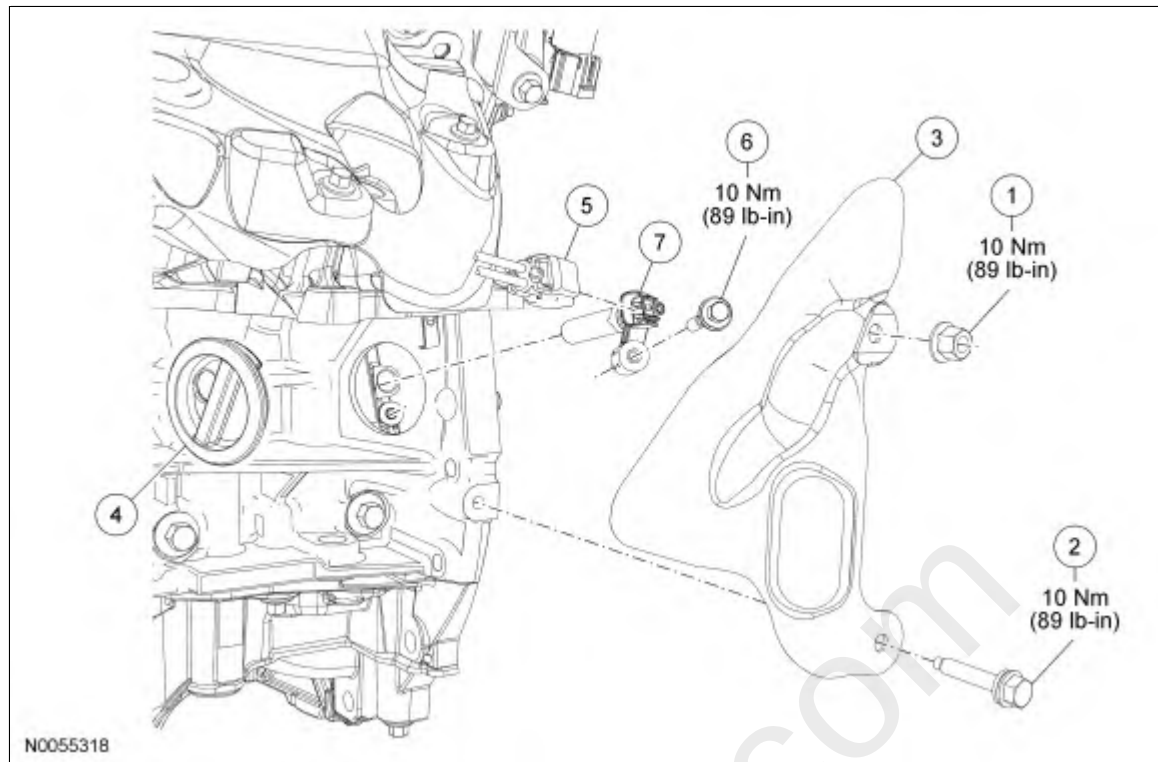
Material

Item	Specification
High Temperature Nickel Anti-Seize Lubricant XL-2	—
Penetrating and Lock Lubricant (US); Penetrating Fluid (Canada) XL-1 (US); CXC-51-A (Canada)	—

Crankshaft Position (CKP) Sensor

NOTE: It is necessary to remove the LH turbo charger to access the Crankshaft Position (CKP) sensor. For additional information, refer to [Section 303-04E](#).

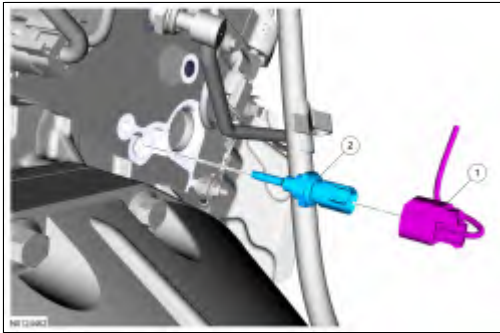
NOTE: After installing the Crankshaft Position (CKP) sensor, use the scan tool to perform the Misfire Monitor Neutral Profile Correction procedure, following the on-screen instructions.



Item	Part Number	Description
1	W701542	Heat shield nut
2	W701669	Heat shield bolt
3	6K342	Heat shield
4	6C070	Rubber grommet cover
5	—	Crankshaft Position (CKP) sensor electrical connector (part of 12C508)
6	W712315	CKP sensor bolt (part of 6D327)
7	6C315	CKP sensor (part of 6D327)

Cylinder Head Temperature (CHT) Sensor

NOTE: It is necessary to remove the RH fender splash shield to access the Cylinder Head Temperature (CHT) sensor. For additional information, refer to [Section 501-02](#).



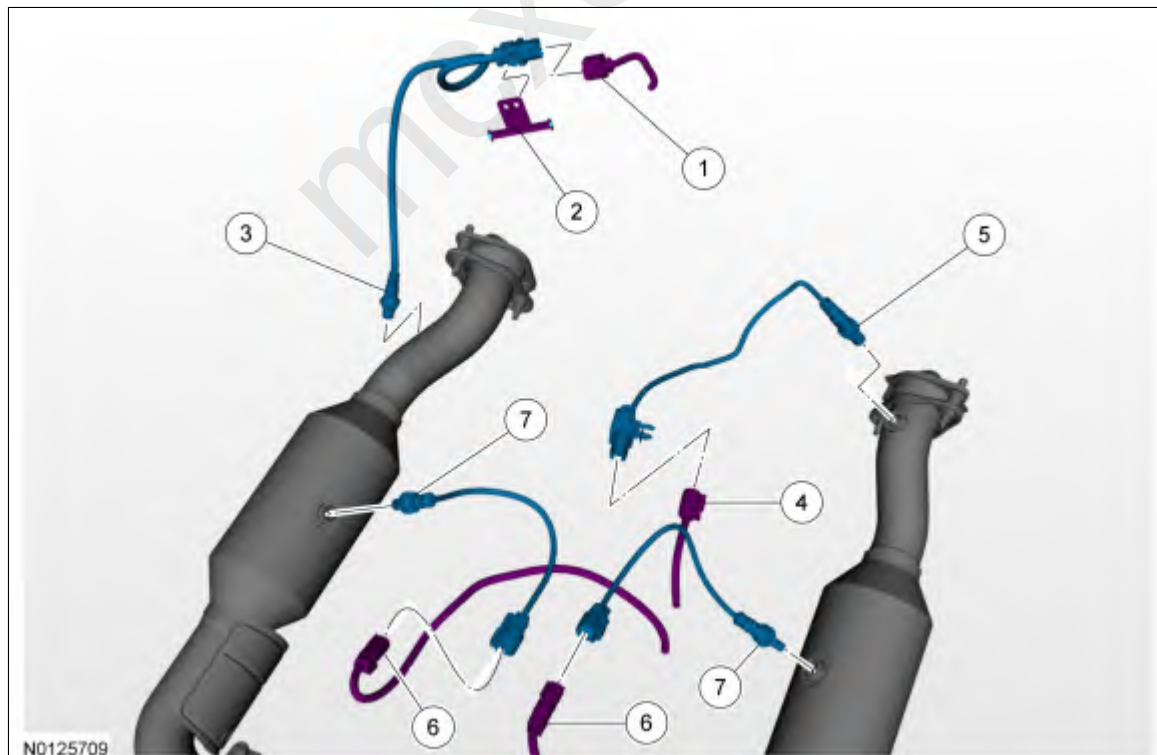
Item	Part Number	Description
1	—	Cylinder Head Temperature (CHT) sensor electrical connector (part of 12C508)
2	6G004	CHT sensor - 10 Nm (89 lb-in)

Heated Oxygen Sensor (HO2S) and Catalyst Monitor Sensor (CMS)

NOTE: If necessary, lubricate the Heated Oxygen Sensor (HO2S) and/or Catalyst Monitor Sensor (CMS) with penetrating and lock lubricant to assist in removal.

NOTE: Apply anti-seize to the threads of the HO2S and/or CMS prior to installing.

NOTE: The correct torque wrench setting must be calculated when using the Exhaust Gas Oxygen Sensor Socket to install the HO2S and/or CMS. [Refer to the Torque Wrench Adapter Formulas in the Appendix.](#)

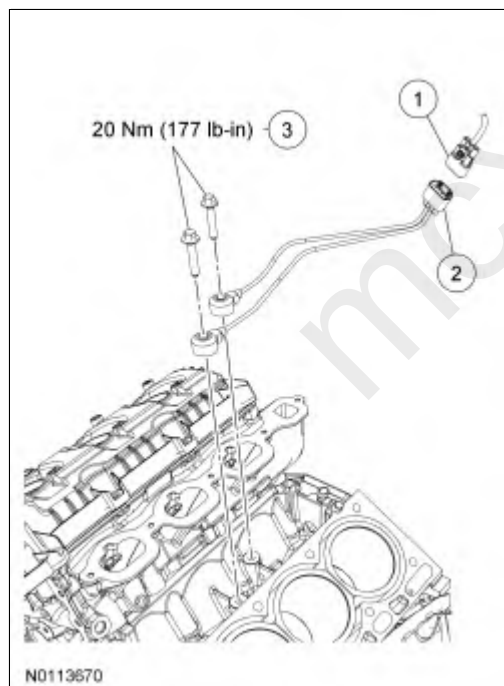


Item	Part Number	Description
1	—	Heated Oxygen Sensor (HO2S) electrical connector (part of 12C508)
2	—	<u>HO2S</u> wiring harness electrical connector retainer (part of 12C508)
3	9F472	<u>HO2S</u>
4	—	<u>HO2S</u> electrical connector (part of 15525)
5	9F472	<u>HO2S</u>
6	—	Catalyst Monitor Sensor (CMS) electrical connectors (part of 15525)
7	9G444	<u>CMS</u>

Knock Sensor (KS)

NOTE: It is necessary to remove the lower intake manifold to access the Knock Sensor (KS). For additional information, refer to [Section 303-01A](#).

NOTE: LH cylinder head removed in graphic for clarity.



Item	Part Number	Description
1	—	Knock Sensor (KS) electrical connector (part of 12C508)
2	12A699	<u>KS</u>

3	W704749	KS bolt (2 required)
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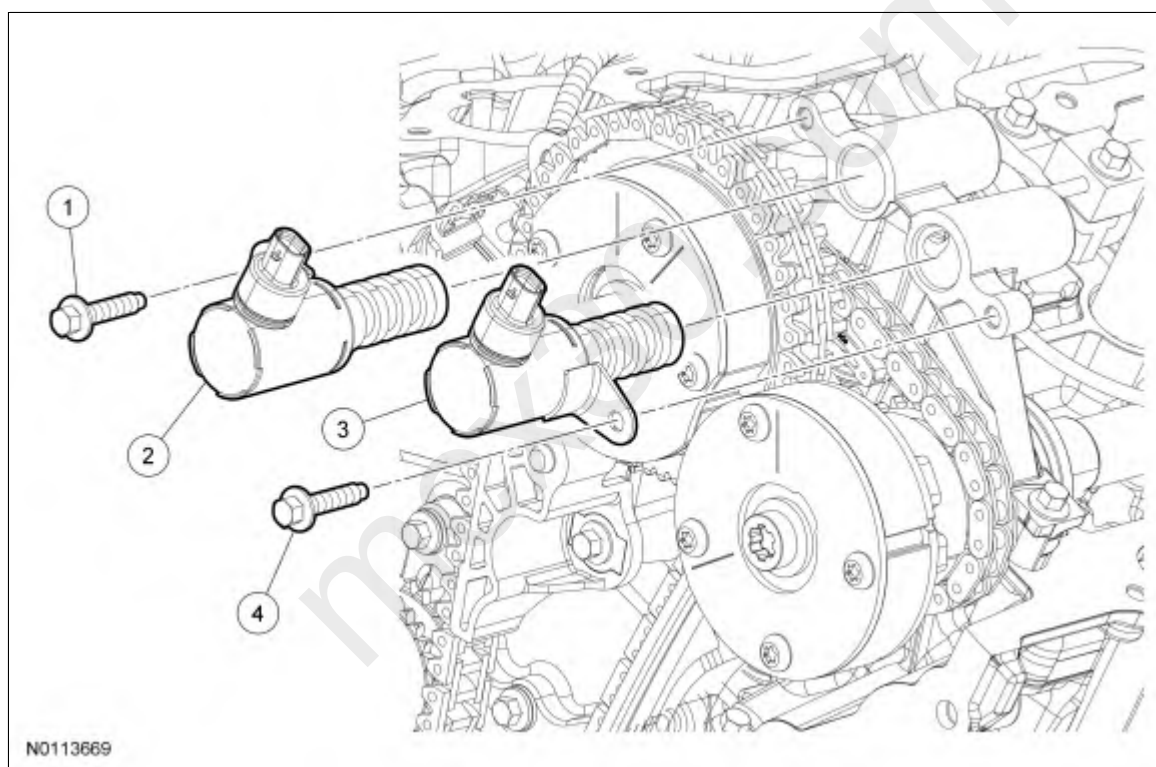
Variable Camshaft Timing (VCT) Oil Control Solenoid

NOTE: It is necessary to remove the RH or LH valve cover to access the Variable Camshaft Timing (VCT) oil control solenoid. For additional information, refer to [Section 303-01A](#).

NOTE: Position the VCT oil control solenoid and tighten the bolts in 2 stages.

- Stage 1: Tighten to 8 Nm (71 lb-in).
- Stage 2: Tighten an additional 20 degrees.

NOTE: LH shown, RH similar.



Item	Part Number	Description
1	W500215	LH intake Variable Camshaft Timing (VCT) oil control solenoid bolt
2	6B297	LH intake <u>VCT</u> oil control solenoid
3	6B297	LH exhaust <u>VCT</u> oil control solenoid
4	W500215	LH exhaust <u>VCT</u> oil control solenoid bolt

1. Refer to the procedures and/or exploded views in this section for any Warnings, Notices, Notes, Materials, Specifications, and Special Tools. Items in the exploded views may not be listed in order of removal.

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