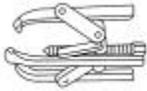


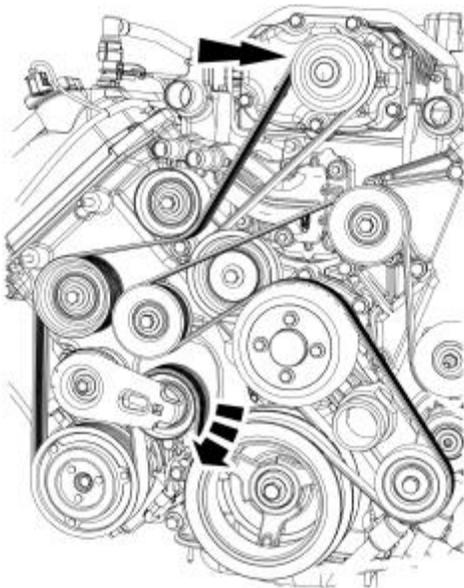
Crankshaft Pulley

Special Tool(s)	
 <p>ST1184-A</p>	<p>3 Jaw Puller 303-D121 or equivalent</p>
 <p>ST1287-A</p>	<p>Installer, Crankshaft Vibration Damper 303-102 (T74P-6316-B)</p>
 <p>ST1438-A</p>	<p>Strap Wrench 303-D055 (D85L-6000-A) or equivalent</p>
 <p>ST2834-A</p>	<p>Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool</p>

Material	
Item	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6
Motorcraft® Metal Surface Prep ZC-31-A	—
Motorcraft® SAE 5W-50 Full Synthetic Motor Oil XO-5W50-QGT	WSS-M2C931-C
Motorcraft® Silicone Gasket Remover ZC-30	—

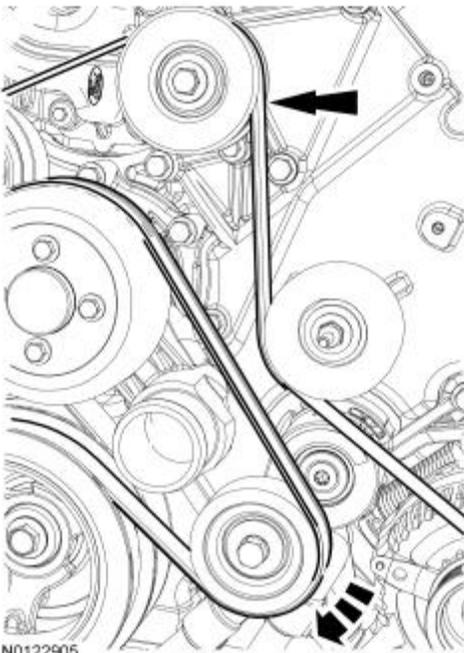
Removal

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to Section 100-02
2. Remove the cooling fan assembly. Section 303-03A
3. Rotate the Supercharger (SC) drive belt tensioner clockwise and remove the drive belt from the SC drive pulley.



N0122956

4. Rotate the accessory drive belt tensioner clockwise and remove the accessory drive belt from the idler pulley.



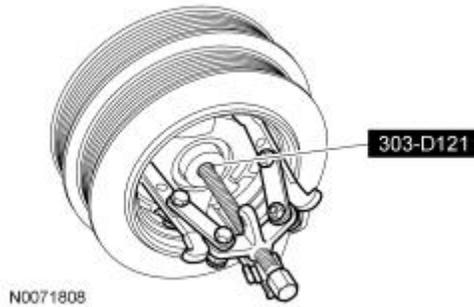
N0122905

5. Position the accessory drive belt and SC drive belt away from the crankshaft pulley.
6. Using the Strap Wrench, remove the crankshaft pulley bolt and the washer.
 - Discard the bolt.



N0071807

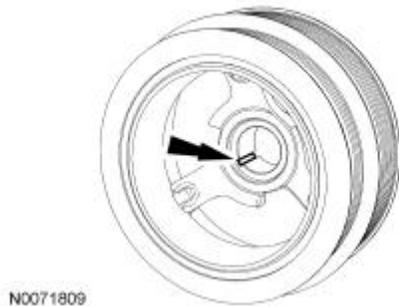
- Using the 3 Jaw Puller, remove the crankshaft pulley.



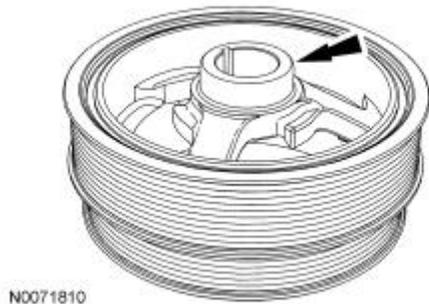
Installation

- NOTE:** If not secured within 4 minutes, the sealant must be removed and the sealing area cleaned. To clean the sealing area, use silicone gasket remover and metal surface prep. Follow the directions on the packaging. Failure to follow this procedure can cause future oil leakage.

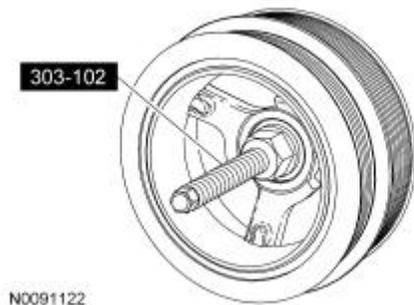
Apply Motorcraft® High Performance Engine RTV Silicone to the Woodruff key slot on the crankshaft pulley.



- Lubricate the crankshaft pulley sealing surface with clean engine oil prior to installation.

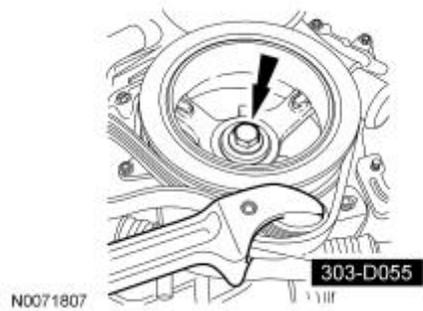


- Using the Crankshaft Vibration Damper Installer, install the crankshaft pulley.

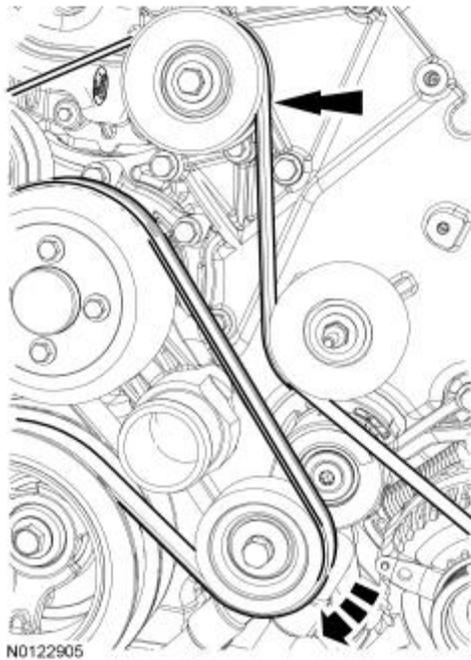


- Using the Strap Wrench, install a new crankshaft pulley bolt and the original washer, tighten the bolt in 4 stages:
 - Stage 1: Tighten to 120 Nm (88 lb-ft).
 - Stage 2: Loosen one full turn.

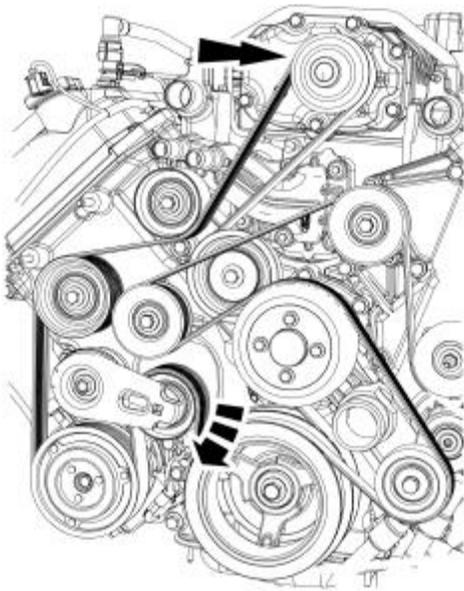
- Stage 3: Tighten to 50 Nm (37 lb-ft).
- Stage 4: Tighten an additional 90 degrees.



5. Position the accessory drive belt and SC drive belt onto the crankshaft pulley.
6. Rotate the accessory drive belt tensioner clockwise and install the accessory drive belt onto the alternator pulley.



7. Rotate the SC drive belt tensioner clockwise and install the drive belt onto the SC drive pulley.

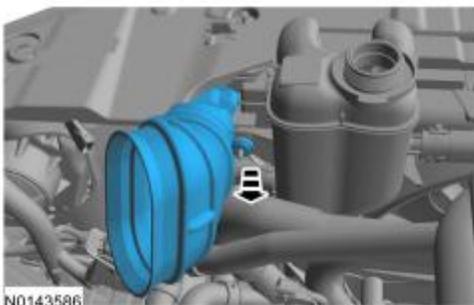


N0122956

8. Install the cooling fan assembly. Section 303-03A
9. After completing the repairs, use the scan tool to perform the Misfire Monitor Neutral Profile Correction procedure following the on-screen instructions.

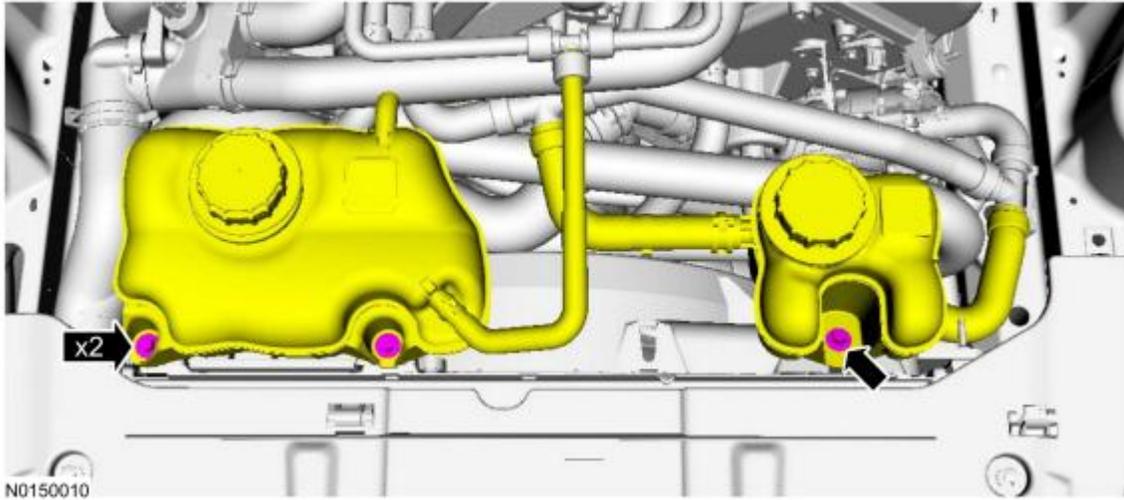
Cooling Fan Motor and Shroud — 5.8L (4V)

1. Remove the Air Cleaner (ACL) assembly. Refer to Section 303-12
2. Drain the SC cooling system. Refer to Section 303-03B



N0143586

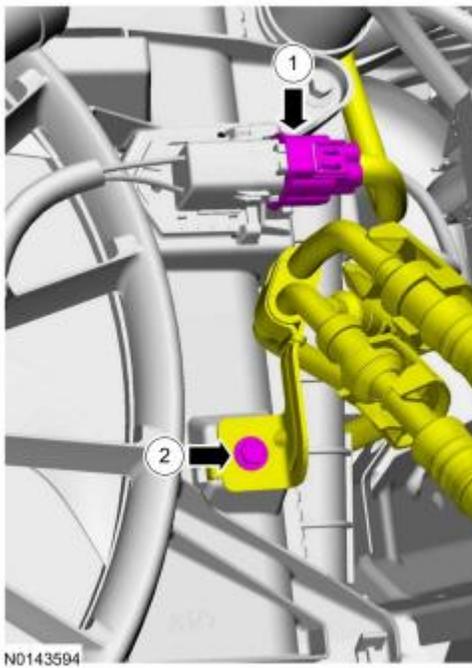
3. To install, tighten to 8 Nm (71 lb-in)



4.

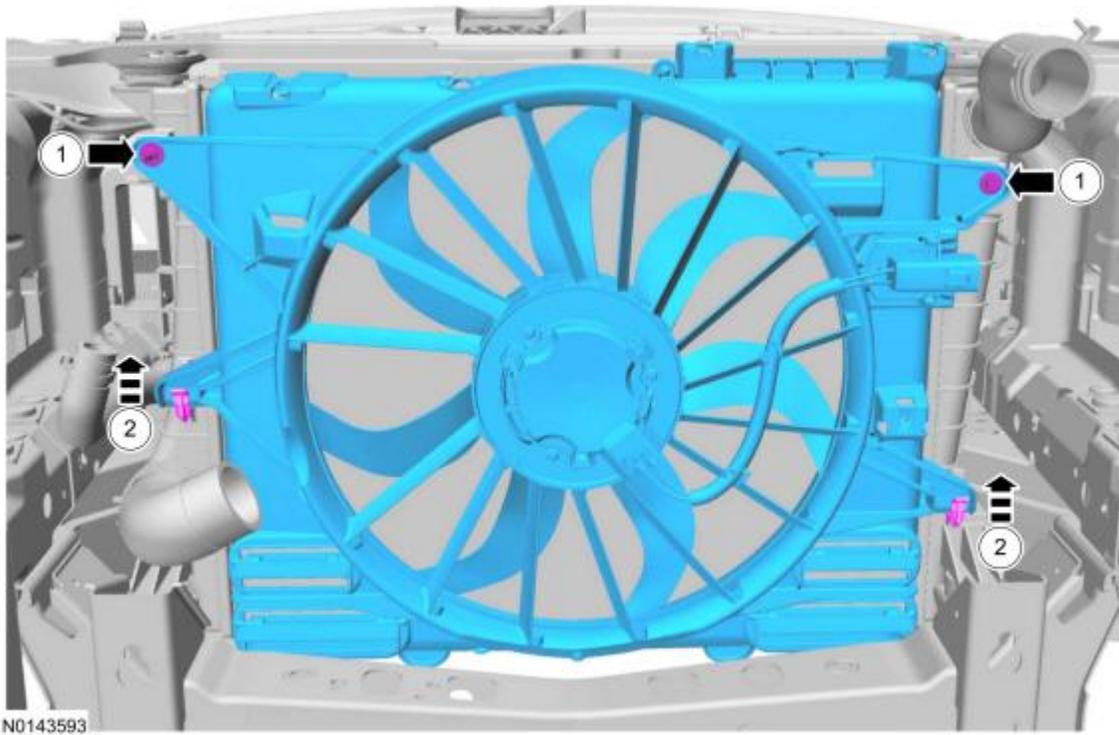
1.

2. To install, tighten to 8 Nm (71 lb-in).



5.

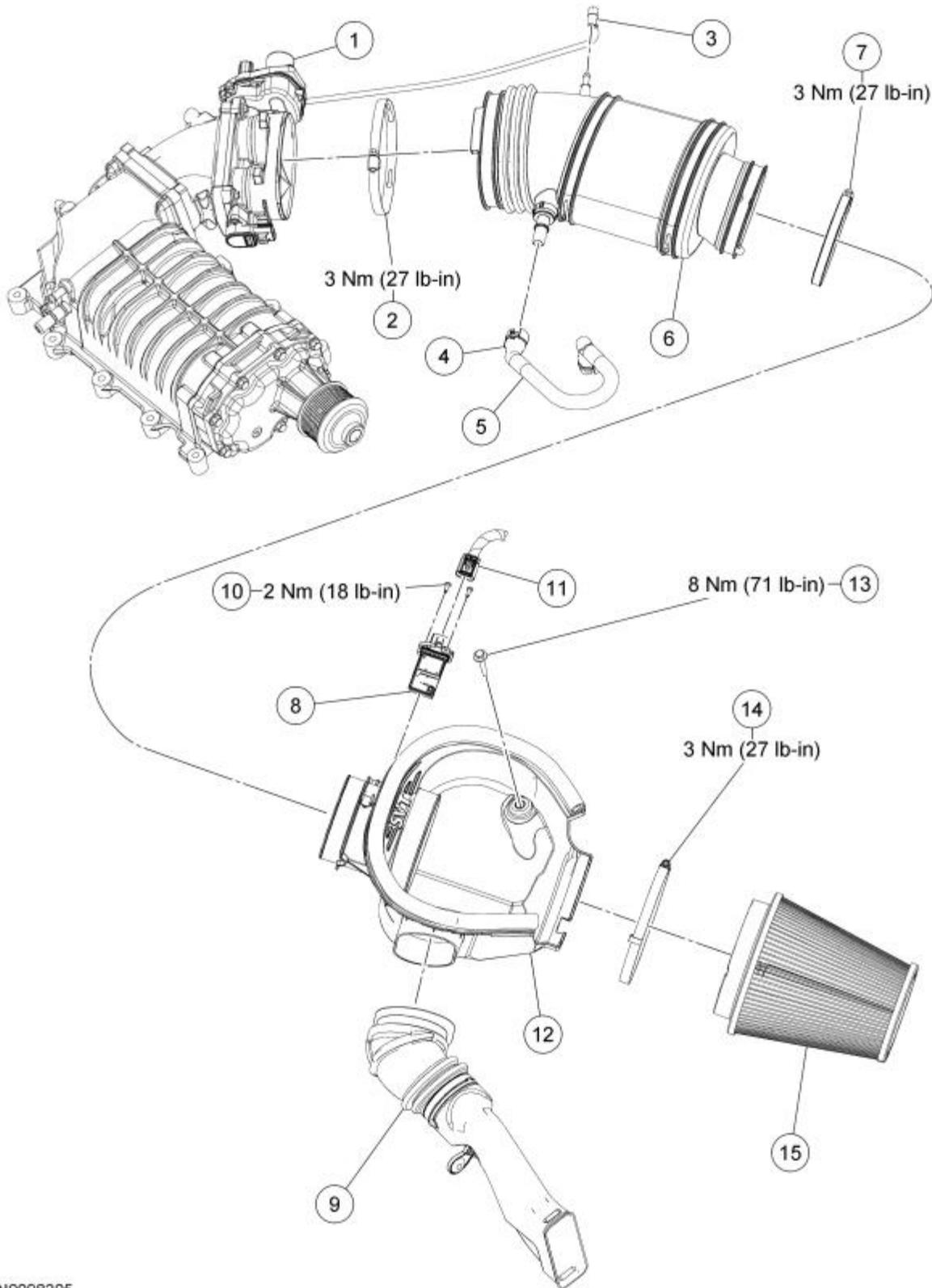
1. To install, tighten to 8 Nm (71 lb-in).



N0143593

6. To install, reverse the removal procedure.
-

Intake Air System Components — Exploded View, 5.8L (4V)



N0098305

Item	Part Number	Description
1	9E926	Throttle Body (TB)
2	—	Air Cleaner (ACL) outlet pipe-to- TB clamp (part of 9B659)
3	9E499	Vacuum hose
4	—	Crankcase ventilation tube-to- ACL outlet pipe quick connect coupling (part of 6758)

5	6758	Crankcase ventilation tube
6	9B659	ACL outlet pipe
7	—	ACL outlet pipe-to- ACL housing clamp (part of 9B659)
8	12B579	Mass Air Flow (MAF) sensor
9	9C675	ACL inlet pipe
10	W709287	MAF sensor screw (2 required)
11	—	MAF electrical connector (part of 12A690)
12	9A600	ACL housing
13	W505427	ACL housing bolt
14	—	ACL element clamp (part of 9601)
15	9601	ACL element

NOTE: The ACL outlet pipe should be securely sealed to prevent unmetered air from entering the engine.

NOTE: The crankcase ventilation tube is equipped with a quick connect coupling. For additional information, refer to Section 310-00

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.

Quick Connect Coupling

Disconnect — Type I



WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.



WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.



WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.



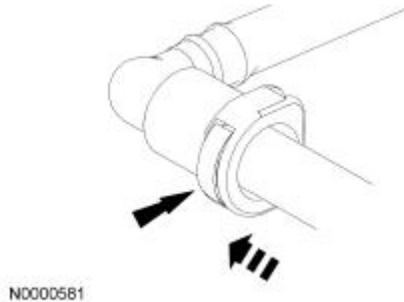
WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.

NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur. Apply clean engine oil to the end of the tube before inserting the tube into the connector.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

NOTICE: Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.

1. If servicing a liquid fuel tube, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01
3. Depress the retainer clip and disconnect the quick connect coupling from the tube.



Connect — Type I

1. **NOTE:** Make sure the retainer clip is fully seated and locked onto the tube by pulling on the quick connect coupling.

Install the quick connect coupling onto the tube until it is fully seated.



2. Connect the battery ground cable. For additional information, refer to Section 414-01

Disconnect — Type II

WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

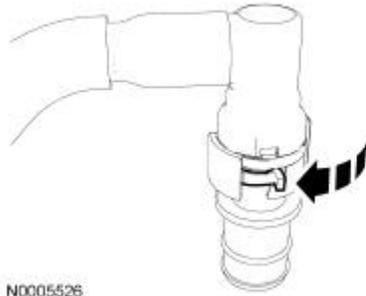
WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur. Apply clean engine oil to the end of the tube before inserting the tube into the connector.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

NOTICE: Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.

1. Disconnect the battery ground cable. For additional information, refer to Section 414-01
2. Release the retainer clip on the quick connect coupling.



3. Disconnect the quick connect coupling from the fitting.



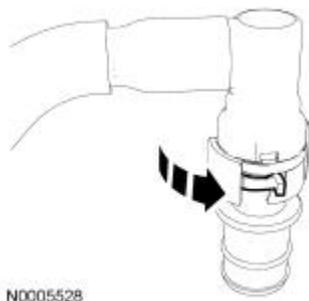
Connect — Type II

1. Release the retainer clip and install the quick connect coupling onto the fitting until fully seated.



2. **NOTE:** Make sure the retainer clip is fully seated and locked onto the tube by pulling on the quick connect coupling.

Apply retainer clip into the latched position.



3. Connect the battery ground cable. For additional information, refer to Section 414-01

Disconnect — Type III

⚠ WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

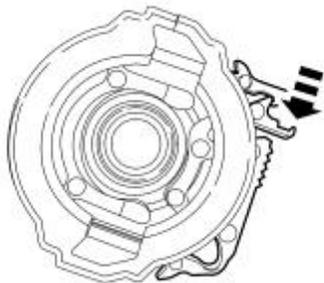
⚠ WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.

NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur. Apply clean engine oil to the end of the tube before inserting the tube into the connector.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

NOTICE: Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.

1. If servicing a liquid fuel tube, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01
3. Release the quick connect coupling primary retainer clip.



4. Rotate the primary retainer clip to the fully opened position and squeeze the secondary locking tabs to release the retainer clip.



A0088906

5. Position the retainer clip to the outward position and disconnect the quick connect coupling from the tube.

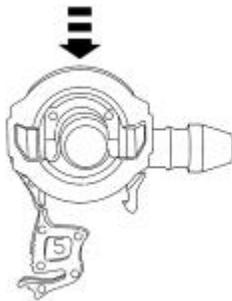


A0089136

Connect — Type III

1. Install the quick connect coupling onto the tube until fully seated.
2. **NOTE:** Make sure the retainer clip clicks into place when installing.

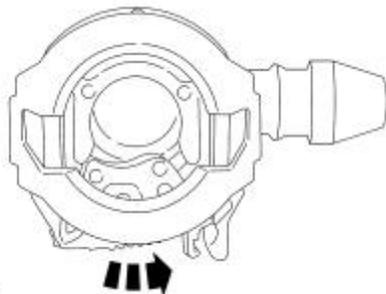
Depress the retainer clip until it is flush with the quick connect coupling housing.



N0013892

3. **NOTE:** Make sure the retainer clip is fully seated and locked onto the tube by pulling on the quick connect coupling.

Rotate the primary locking tab on the retainer clip to the closed position.



N0013893

4. Connect the battery ground cable. For additional information, refer to Section 414-01

Disconnect — Type IV

 **WARNING:** Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

 **WARNING:** Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

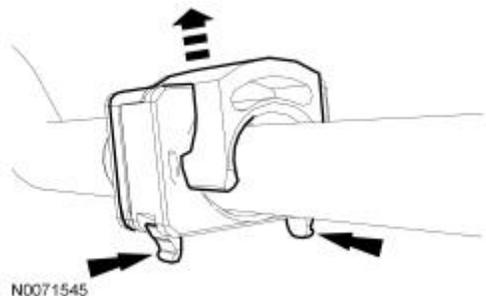
 **WARNING:** Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur. Apply clean engine oil to the end of the tube before inserting the tube into the connector.

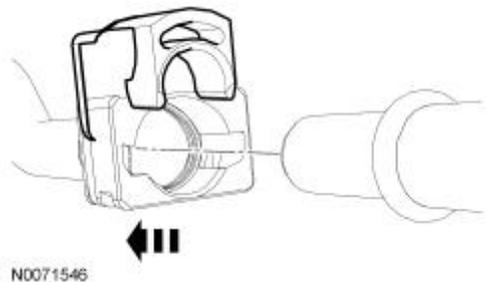
NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

NOTICE: Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.

1. If servicing a liquid fuel tube quick connect coupling, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01
3. Depress the legs of the retainer clip and position the clip in an outward position.

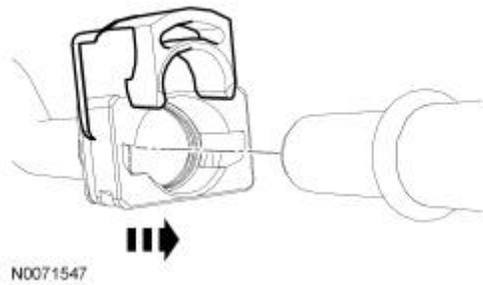


4. Disconnect the quick connect coupling from the tube.



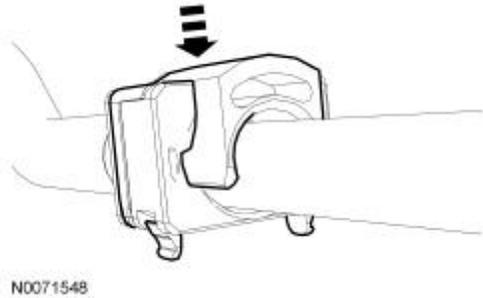
Connect — Type IV

1. Install the quick connect coupling onto the tube until fully seated.



2. **NOTE:** Make sure the retainer clip is fully seated and locked onto the tube by pulling on the quick connect coupling.

Press the retainer clip into the quick connect coupling body until flush and the legs are locked in place.



3. Connect the battery ground cable. For additional information, refer to Section 414-01

Disconnect — Type V

⚠ WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: When handling fuel, always observe fuel handling precautions and be prepared in the event of fuel spillage. Spilled fuel may be ignited by hot vehicle components or other ignition sources. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.

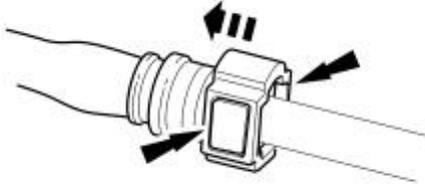
NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

1. If servicing a liquid fuel tube quick connect coupling, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. If servicing an EVAP or fuel-related component, disconnect the battery ground cable. For additional information, refer to Section 414-01
3. **NOTICE: Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.**

Disconnect the fuel tube quick connect coupling.

- Press the 2 fuel tube quick connect coupling buttons and pull the fuel tube to disconnect.

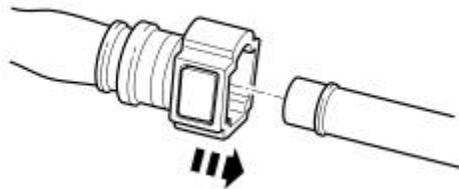


N0025119

Connect — Type V

1. **NOTE:** Make sure the fuel tube clicks into place when installing the tube. To make sure that the fuel tube is fully seated, pull on the tube.

Install the quick connect coupling onto the tube until it is fully seated.



N0025120

2. If servicing an EVAP or fuel-related component, connect the battery ground cable. For additional information, refer to Section 414-01

Spring Lock Couplings

Special Tool(s)



ST1399-A

Spring Lock Coupling Disconnect Tool
310-S039 (T90T-9550-S) or equivalent

Disconnect - Type I



WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.



WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.



WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.



WARNING: When handling fuel, always observe fuel handling precautions and be prepared in the event of fuel spillage. Spilled fuel may be ignited by hot vehicle components or other ignition sources. Failure to follow these instructions may result in serious personal injury.

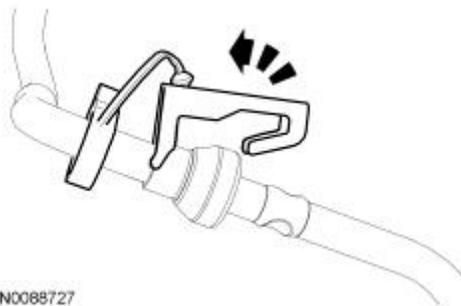


WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

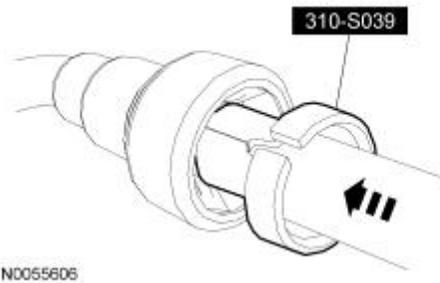
NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

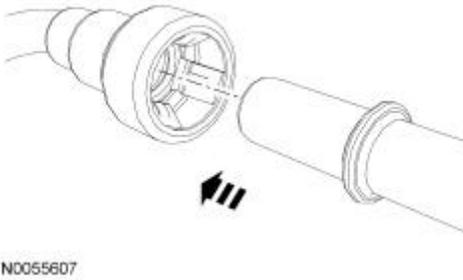
1. If servicing a liquid fuel tube spring lock coupling, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01
3. If equipped, remove the fuel tube safety clip.



4. Install the Spring Lock Coupling Disconnect Tool on the tube and push into the spring lock coupling to release.

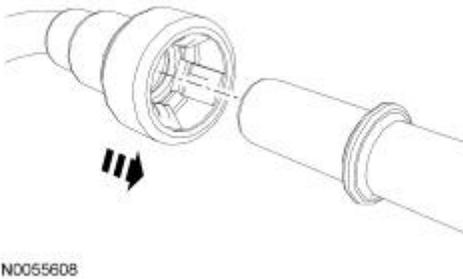


5. Separate the spring lock coupling from the tube fitting.

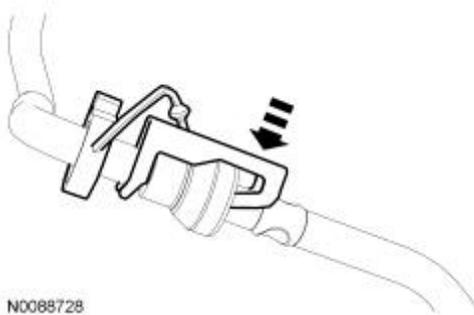


Connect

1. Align and push the spring lock coupling onto the tube fitting until fully seated.



2. Pull on the coupling to make sure it is fully engaged.
3. If equipped, install the fuel tube safety clip.



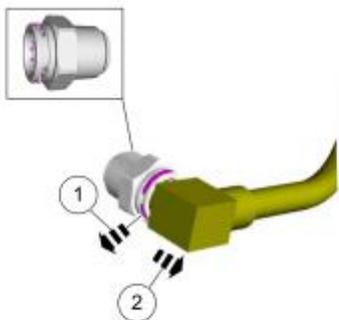
4. Connect the battery ground cable. For additional information, refer to Section 414-01

Disconnect - Type II

NOTICE: When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur.

NOTICE: Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.

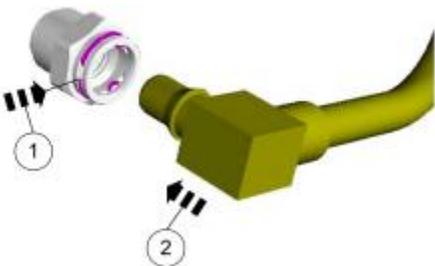
1. **NOTE:** Be careful not to damage the spring clip when removing from the coupling.
 1. Remove the spring clip.
 2. Separate the tube from the coupling.



N0149380

Connect

1.
 1. Insert the spring clip into the coupling.
 2. Align and push the tube fitting into the coupling until fully seated.



N0149378

2. Pull on the line to make sure that it is fully engaged.
-