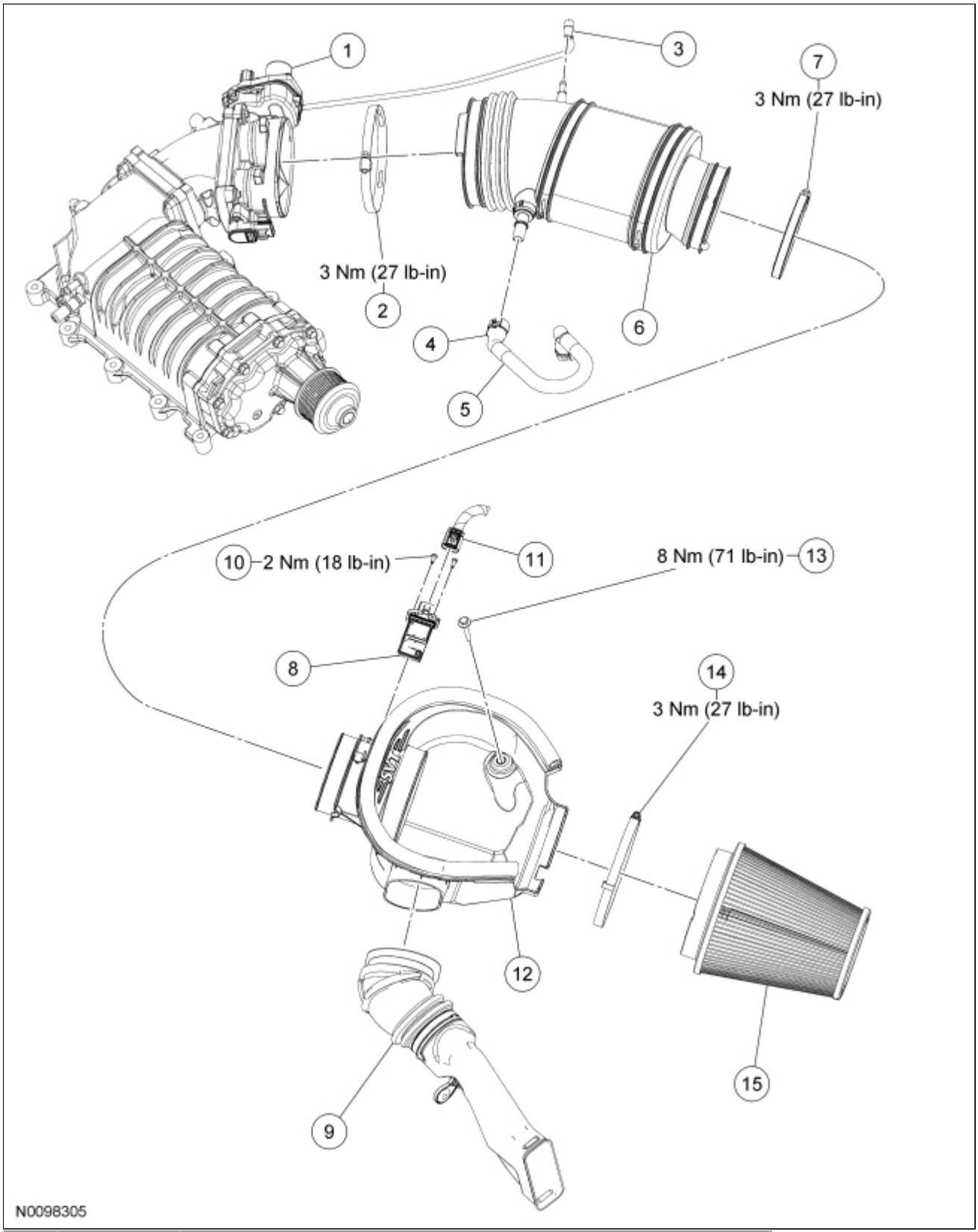
Intake Air System Components — Exploded View, 5.8L (4V)



	Part	

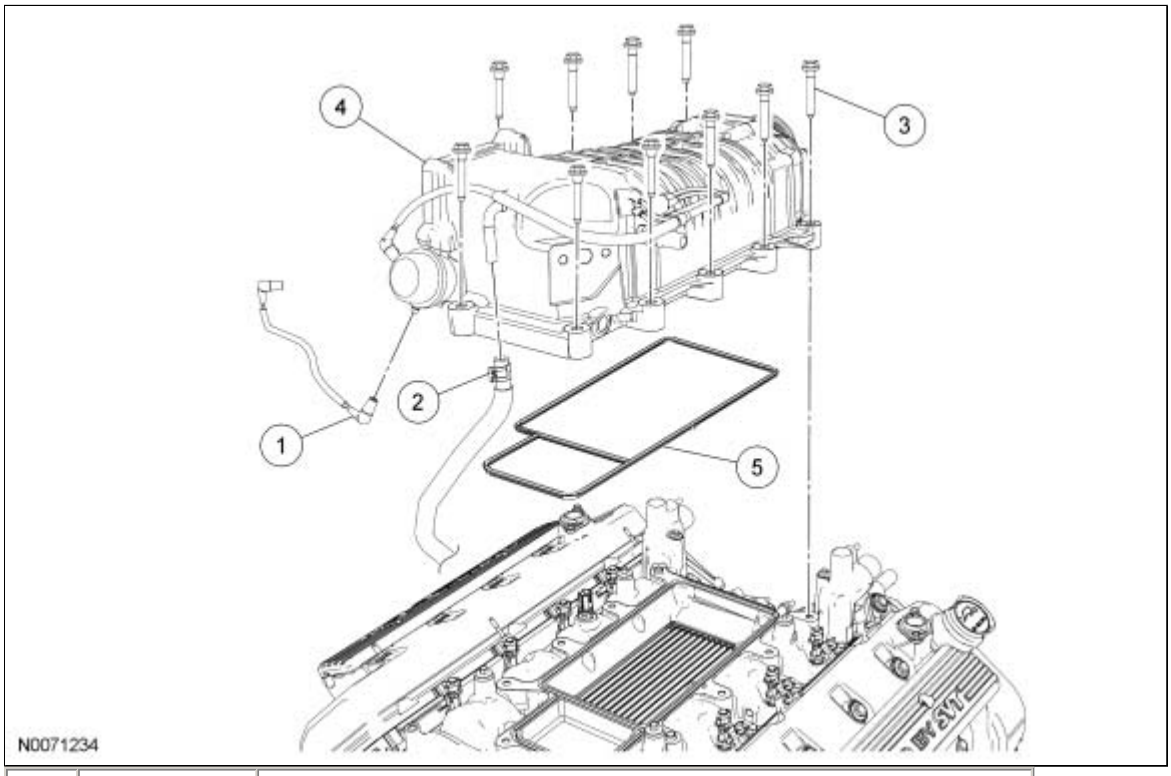
Item	Number	Description
1	9E926	Throttle Body (TB)
2	—	Air Cleaner (ACL) outlet pipe-to- TB clamp (part of 9B659)
3	9E499	Vacuum hose
4	—	Crankcase ventilation tube-to- ACL outlet pipe quick connect coupling (part of 6758)
5	6758	Crankcase ventilation tube
6	9B659	ACL outlet pipe
7	—	ACL outlet pipe-to- 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.

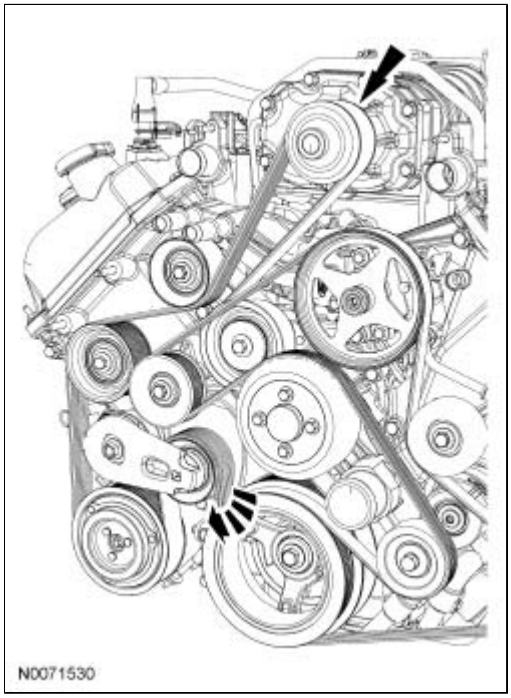
Supercharger



Item	Part Number	Description
1	9E498	Supercharger (SC) bypass vacuum actuator vacuum connector
2	6C324	SC bubbler hose
3	N806177	SC bolt (10 required)
4	6F066	SC
5	9H486	SC gasket

Removal

1. Release the fuel system pressure. For additional information, refer to Section 310-00 .
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
3. Rotate the drive belt tensioner clockwise and detach the drive belt from the Supercharger (SC) pulley.



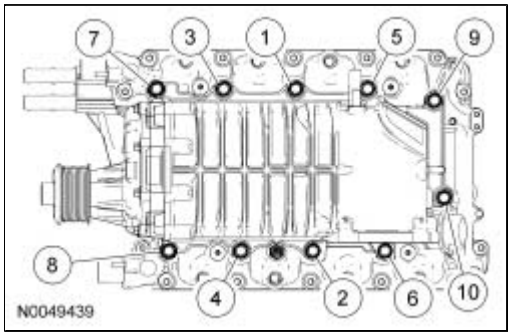
4. Remove the EGR system module. For additional information, refer to Section 303-08 .
5. Remove the fuel rail. For additional information, refer to Section 303-04C .
6. Disconnect the SC bubbler hose and the SC bypass vacuum actuator vacuum connector.
7. Remove the 10 bolts and the SC .
8. Remove and discard the SC gasket.
    - Cover the lower intake manifold with a shop towel to prevent foreign material from falling into the engine.

Installation

1. **NOTE:** Install a new gasket.

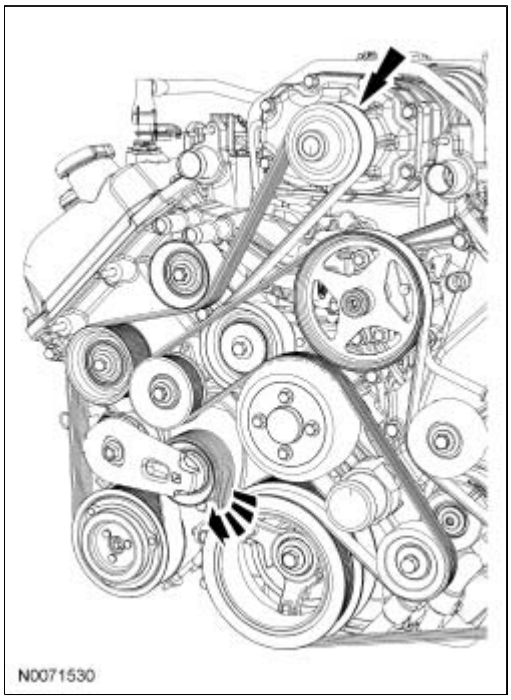
   Position the SC gasket on the lower intake manifold dowels.

2. Position the SC and install the bolts.
    - Tighten the bolts in the sequence shown in 2 stages:
        - Stage 1: Tighten to 5 Nm (44 lb-in).
        - Stage 2: Tighten to 25 Nm (18 lb-ft).



3. Connect the SC bubbler hose and the SC bypass vacuum actuator vacuum connector.

4. Install the fuel rail. For additional information, refer to Section 303-04C .
5. Install the EGR system module. For additional information, refer to Section 303-08 .
6. Rotate the drive belt tensioner clockwise and attach the drive belt to the SC pulley.



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

Battery Disconnect

WARNING: Batteries contain sulfuric acid and produce explosive gases. Work in a well-ventilated area. Do not allow the battery to come in contact with flames, sparks or burning substances. Avoid contact with skin, eyes or clothing. Shield eyes when working near the battery to protect against possible splashing of acid solution. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes, then get prompt medical attention. If acid is swallowed, call a physician immediately. Failure to follow these instructions may result in serious personal injury.

WARNING: Always deplete the backup power supply before repairing or installing any new front or side air bag supplemental restraint system (SRS) component and before servicing, removing, installing, adjusting or striking components near the front or side impact sensors or the restraints control module (RCM). Nearby components include doors, instrument panel, console, door latches, strikers, seats and hood latches. Refer to the Description and Operation portion of Section 501-20B for location of the RCM and impact sensor(s). To deplete the backup power supply energy, disconnect the battery ground cable and wait at least 1 minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped). Failure to follow these instructions may result in serious personal injury or death in the event of an accidental deployment.

WARNING: Always lift a plastic-cased battery with a battery carrier or with hands on opposite corners. Excessive pressure on the battery end walls may cause acid to flow through the vent caps, resulting in personal injury and/or damage to the vehicle or battery.

WARNING: Battery posts, terminals and related accessories contain lead and lead components. Wash hands after handling. Failure to follow these instructions may result in serious personal injury.

NOTE: When the battery (or PCM) is disconnected and connected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The charging system set point may also vary. The vehicle may need to be driven to relearn its strategy.

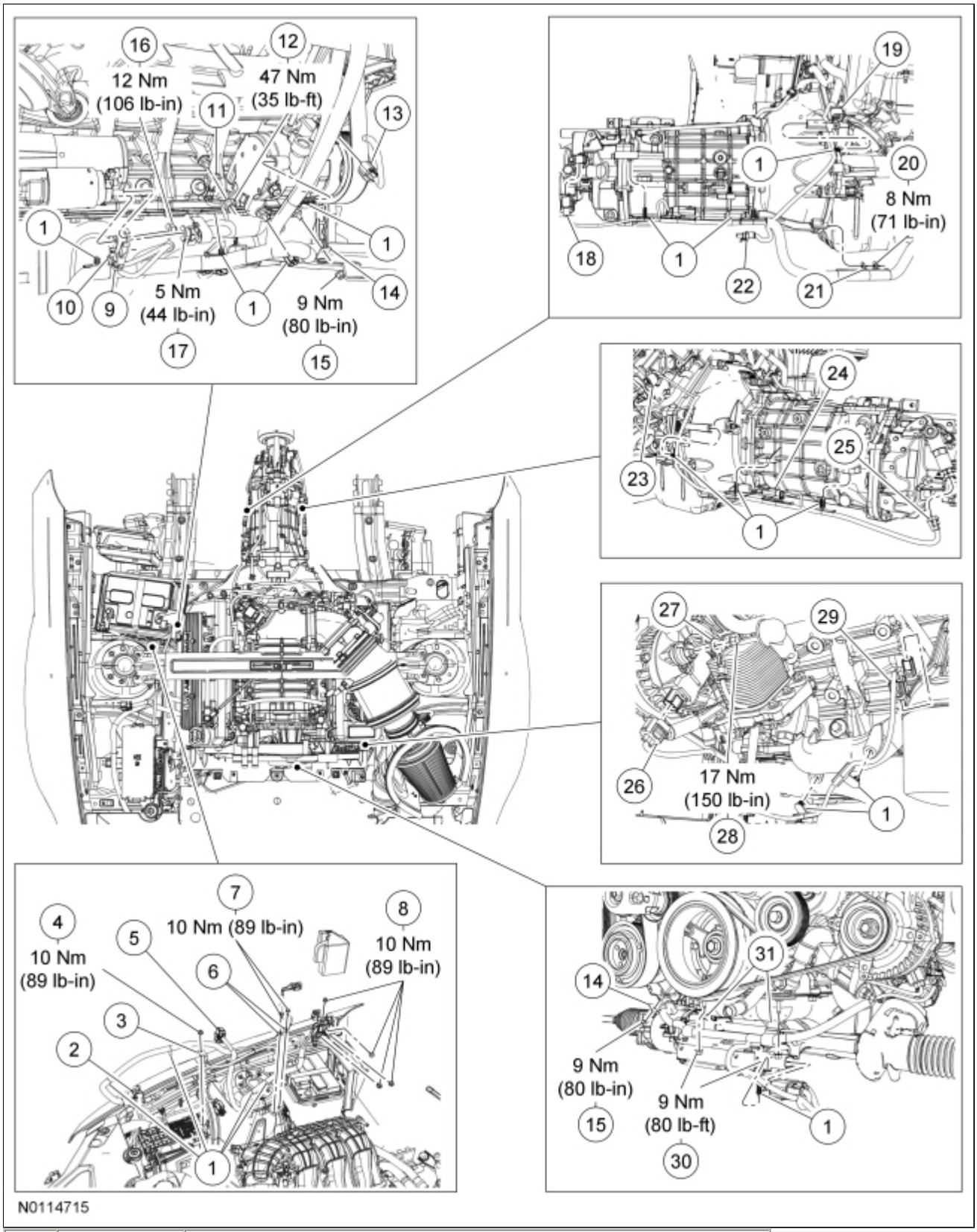
1. **NOTE:** When disconnecting the battery ground cable to interrupt power to the vehicle electrical system, disconnect the battery ground cable only. It is not necessary to disconnect the positive battery cable.

   Disconnect the battery ground terminal.
   - To connect, tighten to 7 Nm (62 lb-in).

2. Disconnect the positive battery terminal.
   - To connect, tighten to 7 Nm (62 lb-in).

3. To connect, reverse the disconnect procedure.

Battery Cables — 5.8L (4V)



	Part	

Item	Number	Description
1	—	Battery cable harness locator (part of 14B060)
2	—	PCM harness connector (part of 14B060)
3	—	Battery Junction Box (BJB) terminal (part of 14B060)
4	W705764	BJB terminal nut
5	—	Engine control harness connector (part of 14B060)
6	—	Battery ground cable body terminal (part of 14B060)
7	W712583	Battery ground cable body terminal bolt (2 required)
8	W705764	Battery cable terminal nut (4 required)
9	—	Starter solenoid positive cable terminal (part of 14B060)
10	—	Starter solenoid wire terminal (part of 14B060)
11	—	Battery ground cable-to-engine terminal (part of 14B060)
12	W520103	Battery ground cable-to-engine terminal nut
13	—	A/C compressor connector (part of 14B060)
14	—	Battery cable harness bracket (part of 14B060)
15	W705790	Battery cable harness bracket nut
16	W706414	Starter solenoid positive cable terminal nut
17	W705790	Starter solenoid wire terminal nut
18	—	Output Shaft Speed (OSS) connector (part of 14B060)
19	—	Right upper Heated Oxygen Sensor (HO2S) connector (part of 14B060)
20	W701014	Lower battery cable harness bracket nut
21	—	Lower battery cable harness bracket (part of 14B060)
22	—	Reverse switch connector (part of 14B060)
23	—	Left upper Heated Oxygen Sensor (HO2S) connector (part of 14B060)
24	—	Left lower Heated Oxygen Sensor (HO2S) connector (part of 14B060)
25	—	Reverse lockout solenoid connector (part of 14B060)
26	—	Generator connector (part of 14B060)
27	—	Generator B+ terminal (part of 14B060)
28	W711953	Generator B+ terminal nut
29	—	Oil pressure switch connector (part of 14B060)
30	W705790	Battery cable harness bracket nut
31	—	Battery cable harness bracket (part of 14B060)
32	—	Electronic Power Assist Steering (EPAS) connector (part of 14B060)

Removal and Installation

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to Section 100-02 .
2. Disconnect the battery. For additional information, refer to Battery Disconnect in this section.
3. Open the Battery Junction Box (BJB) cover, remove the nut and position the BJB terminal aside.

- To install, tighten to 10 Nm (89 lb-in).

4. Remove the bolts and position the battery ground cable body terminals aside.
    - To install, tighten to 10 Nm (89 lb-in).

5. Remove the battery cable terminal nut from the terminal and position the battery cable terminal aside.
    - To install, tighten to 10 Nm (89 lb-in).

6. Disconnect the engine control harness connector and the PCM harness connector.

7. Detach the battery cable harness locators from the RH strut tower and fender area.

8. Remove the nut and position the starter solenoid positive cable terminal aside.
    - To install, tighten to 12 Nm (106 lb-in).

9. Remove the nut and position the starter solenoid wire terminal aside.
    - To install, tighten to 5 Nm (44 lb-in).

10. Remove the nut and position the battery ground cable-to-engine terminal aside.
    - To install, tighten to 47 Nm (35 lb-ft).

11. Remove the nut and position the battery cable harness bracket aside.
    - To install, tighten to 9 Nm (80 lb-in).

12. Disconnect the A/C compressor connector.

13. Detach the battery cable harness locators from the A/C compressor and oil pan.

14. Disconnect the RH upper and lower Heated Oxygen Sensor (HO2S) connectors.

15. Disconnect the reverse switch connector from the transmission.

16. Disconnect the Output Shaft Speed (OSS) sensor connector from the transmission.

17. Disconnect the LH upper and lower Heated Oxygen Sensor (HO2S) connectors.

18. Disconnect the reverse lockout solenoid connector from the transmission.

19. Detach the battery cable harness locators from the transmission.

20. Position aside the generator B+ terminal cover, remove the nut and position the generator B+ terminal aside.
    - To install, tighten to 17 Nm (150 lb-in).

21. Disconnect the generator connector.

22. Disconnect the oil pressure switch connector.

23. Disconnect the Electronic Power Assist Steering (EPAS) connector.

24. Remove the nuts and position the battery cable harness brackets aside.
    - To install, tighten to 9 Nm (80 lb-in).

25. Detach the battery cable harness locators from the EPAS .

26. Remove the battery cables.

27. To install, reverse the removal procedure.

Material

Item	Specification	Fill Capacity
Motorcraft® Specialty Orange Engine Coolant VC-3-B (US); CVC-3-B (Canada)	WSS-M97B44-D	—
Motorcraft® Synthetic Supercharger Fluid XL-4	ESE-M99C115-A	—
Threadlock and Sealer TA-25	WSK-M2G351-A5	—

Torque Specifications

Description	Nm	lb-in
Air Cleaner (ACL) element clamp	3	27
ACL housing bolt	8	71
ACL outlet pipe-to- ACL housing clamp	3	27
ACL outlet pipe-to- ACL housing cover clamp	3	27
ACL outlet pipe-to-Throttle Body (TB) clamp	3	27
Charge Air Cooler (CAC) bolts [a]	—	—
CAC coolant tube assembly bolts	10	89
Lower intake manifold cover bolts [a]	—	—
Mass Air Flow (MAF) sensor screws	2	18
Supercharger (SC) bolts [a]	—	—

[a] Refer to the procedure in this section.

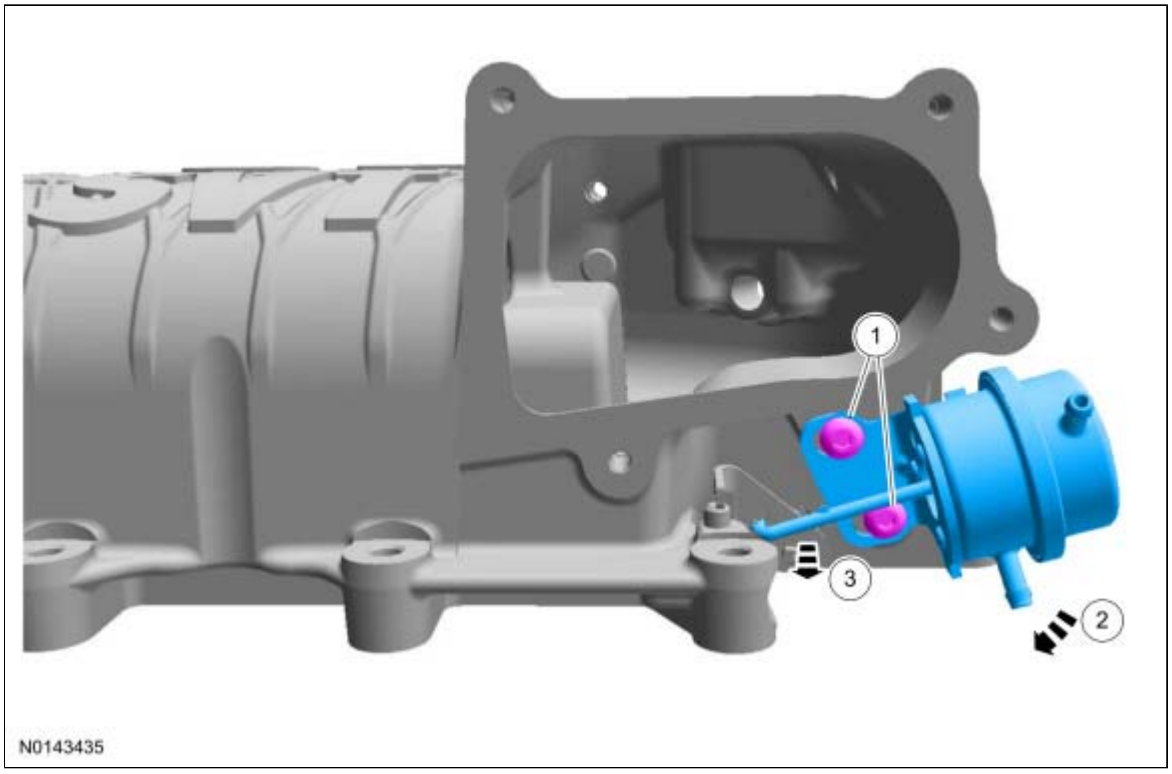
Supercharger Bypass Vacuum Actuator

General Equipment

Actuator Adjustment Tool

Removal

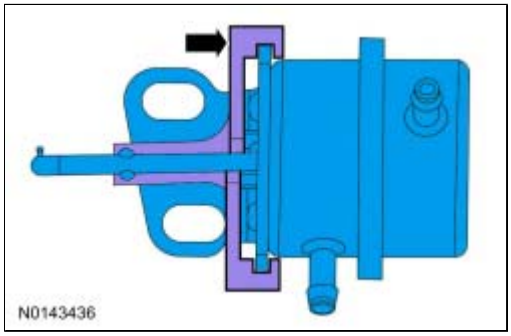
1. Remove the SC . Refer to Section 303-12 .
2.



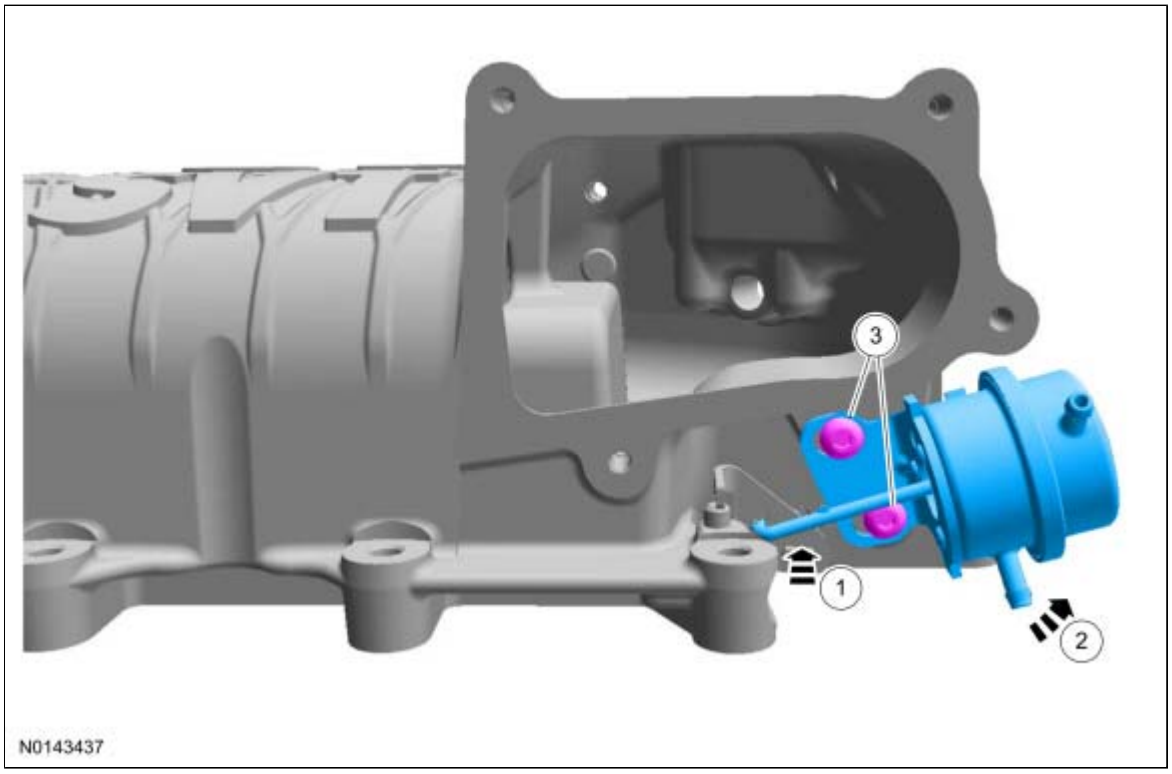
Installation

1. ***NOTICE:*** **The actuator adjustment tool included with the new actuator kit must be used when installing the Supercharger (SC) bypass vacuum actuator. Failure to correctly adjust the actuator will result in incorrect operation of the SC assembly.**

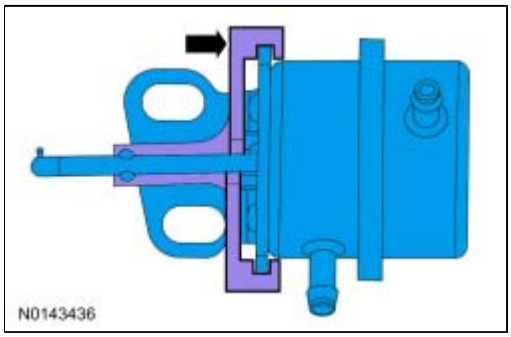
   General Equipment: Actuator Adjustment Tool.



2.
    1.
    2.
    3. Tighten to 20 Nm (177 lb-in).

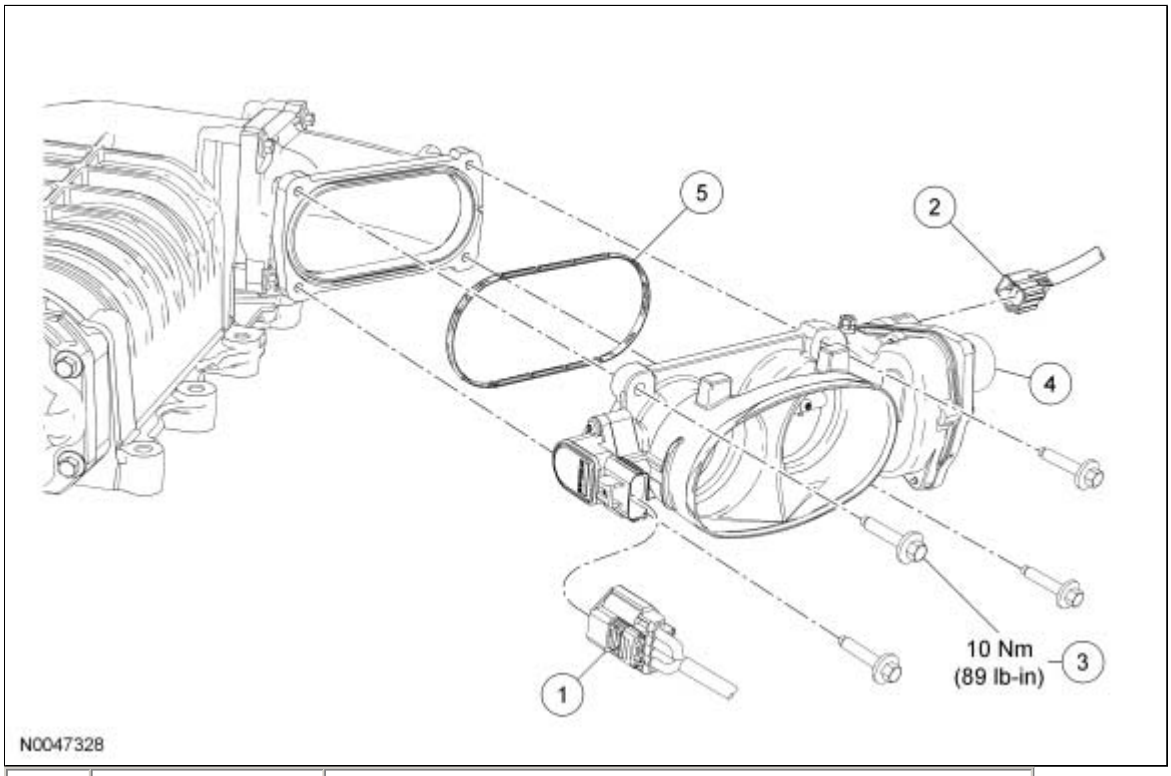


3. Remove General Equipment: Actuator Adjustment Tool.



4. Install the SC . Refer to Section 303-12 .

Throttle Body



Item	Part Number	Description
1	Part of 12C908	Throttle Position (TP) sensor electrical connector
2	Part of 12C908	Electronic throttle control electrical connector
3	N806154	Throttle Body (TB) bolt (4 required)
4	9E926	TB
5	9E936	TB -to- TB spacer gasket

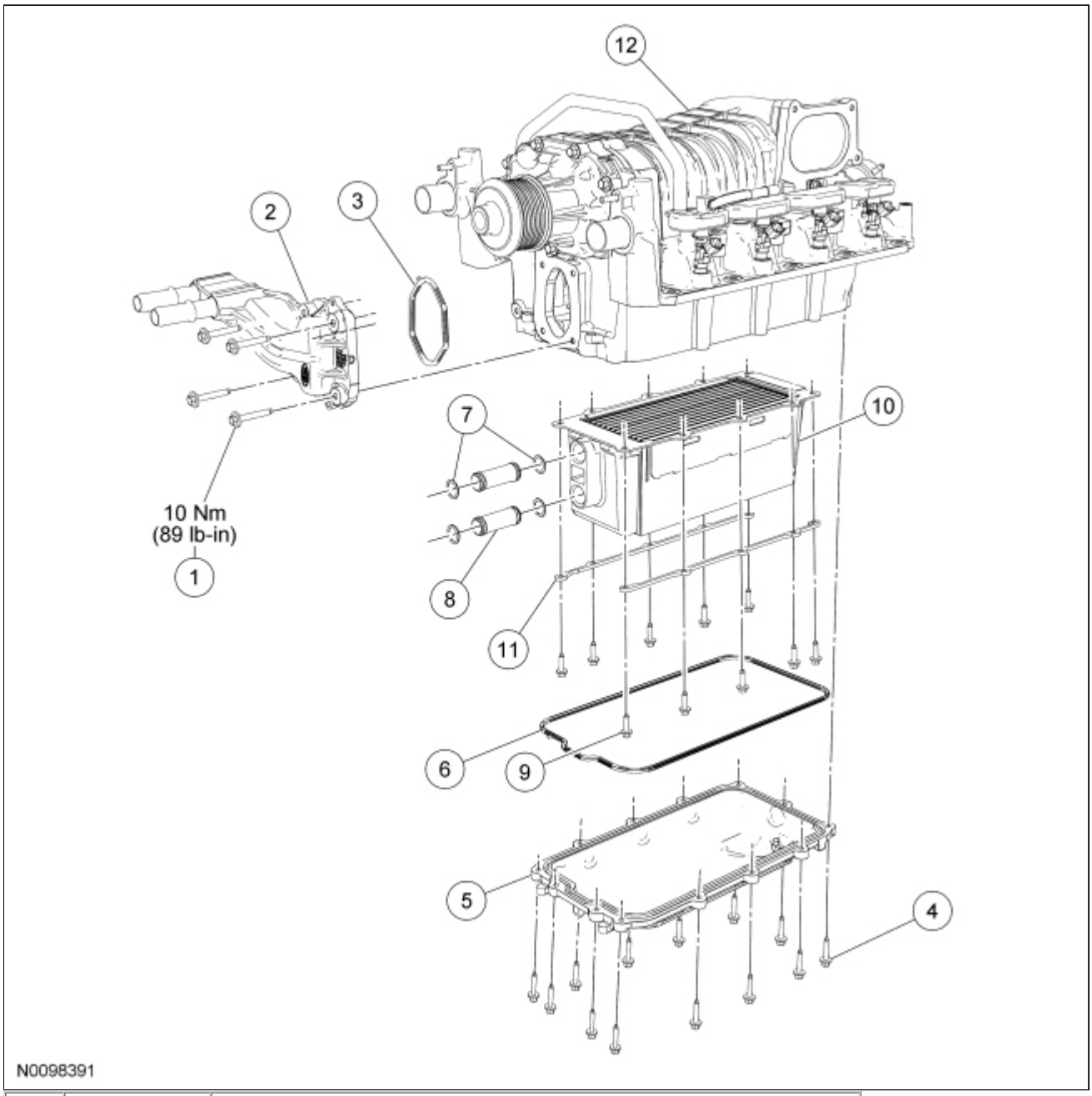
Removal and Installation

1. Remove the Air Cleaner (ACL) outlet pipe, refer to Section 303-12 .
2. Disconnect the Throttle Position (TP) sensor electrical connector.
3. Disconnect the electronic throttle control electrical connector.
4. Remove the 4 bolts and the Throttle Body (TB) and discard the gasket.
    - Tighten to 10 Nm (89 lb-in).
5. To install, reverse the removal procedure.
    - Install a new TB gasket.

Charge Air Cooler

Material

Item	Specification
Motorcraft® Specialty Orange Engine Coolant VC-3-B (US); CVC-3-B (Canada)	WSS-M97B44-D
Threadlock and Sealer TA-25	WSK-M2G351-A5



Item	Part Number	Description

1	N807071	Charge Air Cooler (CAC) coolant tube assembly bolt (4 required)
2	9H308	CAC coolant tube assembly
3	9L438	CAC coolant tube assembly gasket
4	W704682	Lower intake manifold cover bolt (13 required)
5	9424B	Lower intake manifold cover
6	9E436	Lower intake manifold cover gasket
7	N802927	CAC tube O-ring seals (4 required)
8	9L442	CAC coolant connector tube (2 required)
9	N605892	CAC bolt (10 required)
10	6K775	CAC
11	6K808	CAC rail support (2 required)
12	6F066	Supercharger (SC)

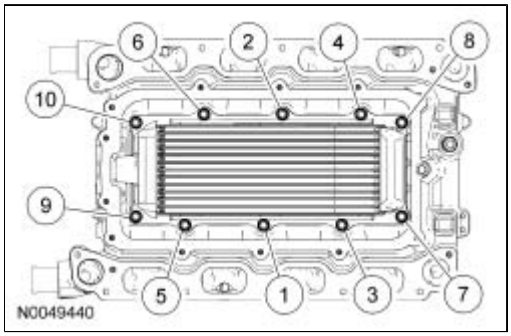
Removal

1. Remove the intake manifold. For additional information, refer to Section 303-01C .
2. Remove the 4 bolts and the Charge Air Cooler (CAC) coolant tube assembly.
3. Remove the 2 CAC coolant connector tubes and the 4 O-ring seals.
   - Discard the O-ring seals.
4. Remove the 13 bolts and the lower intake manifold cover and gasket.
5. Remove the 10 bolts, the 2 CAC rail supports and the CAC .

Installation

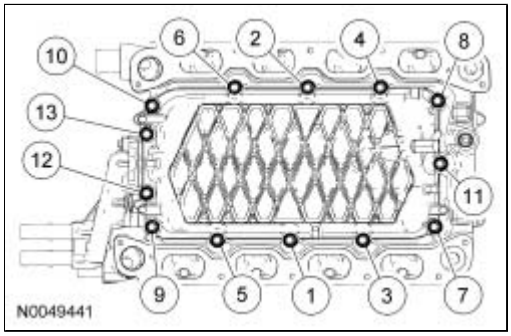
1. **NOTE:** Apply threadlock and sealer to the CAC bolts prior to installation.

   Position the CAC and install the support rails and bolts.
   - Tighten the bolts in the sequence shown in 2 stages:
     - Stage 1: Tighten to 2 Nm (18 lb-in).
     - Stage 2: Tighten to 10 Nm (89 lb-in).



2. **NOTE:** Inspect the lower intake manifold cover gasket. Install a new gasket if necessary.

   Position the gasket and the lower intake manifold cover, and install the bolts.
   - Tighten the bolts in the sequence shown to 10 Nm (89 lb-in).



3. Apply clean engine coolant to the new CAC coolant connector tube O-ring seals, and install them on the CAC coolant connector tubes.

4. Install the CAC coolant connector tubes.

5. **NOTE:** Inspect the CAC coolant tube assembly and gasket. Install a new gasket if necessary.

   Position the gasket and the CAC coolant tube assembly, and install the bolts.
   - Tighten to 10 Nm (89 lb-in).

6. Install the intake manifold. For additional information, refer to Section 303-01C .

Exhaust Gas Recirculation (EGR) System Module Tube

Removal

1. Remove the battery tray. For additional information, refer to Section 414-01 .
2. Disconnect the EGR system module tube-to-EGR system module fitting.
3. Disconnect the EGR system module tube-to-exhaust manifold fitting and remove the tube.

Installation

1. Install the EGR system module tube and connect the EGR system module tube-to-exhaust manifold fitting.
   - Tighten to 40 Nm (30 lb-ft).
2. Connect the EGR system module tube-to-EGR system module fitting.
   - Tighten to 40 Nm (30 lb-ft).
3. Install the battery tray. For additional information, refer to Section 414-01 .

Exhaust Gas Recirculation (EGR) System Module

Removal and Installation

1. Disconnect the EGR system module electrical connector.

2. Disconnect the engine harness vacuum-to-EGR system module connector.

3. Disconnect the EGR system module tube-to-EGR system module fitting.
   - To install, tighten to 40 Nm (30 lb-ft).

4. **NOTE:** Upon installation, make sure to install the correct EGR system module mounting gasket. Even though varying gaskets may be very similar, orifice sizes may differ thus causing performance issues.

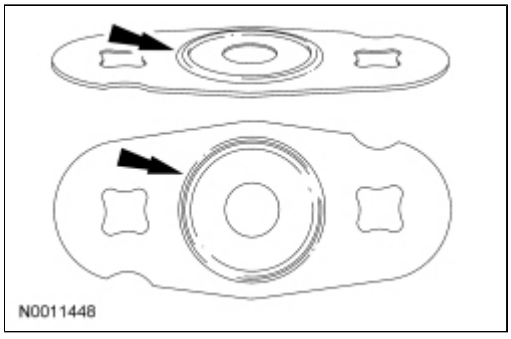
   Remove the 2 bolts, the EGR system module and the gasket. Discard the gasket.
   - To install, tighten to 25 Nm (18 lb-ft).

5. ***NOTICE:*** **Do not use metal scrapers, wire brushes, power abrasive disc or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak paths. Use a plastic scraping tool to remove all traces of the old gasket.**

   NOTE: The EGR system module sealing surfaces are soft metals.

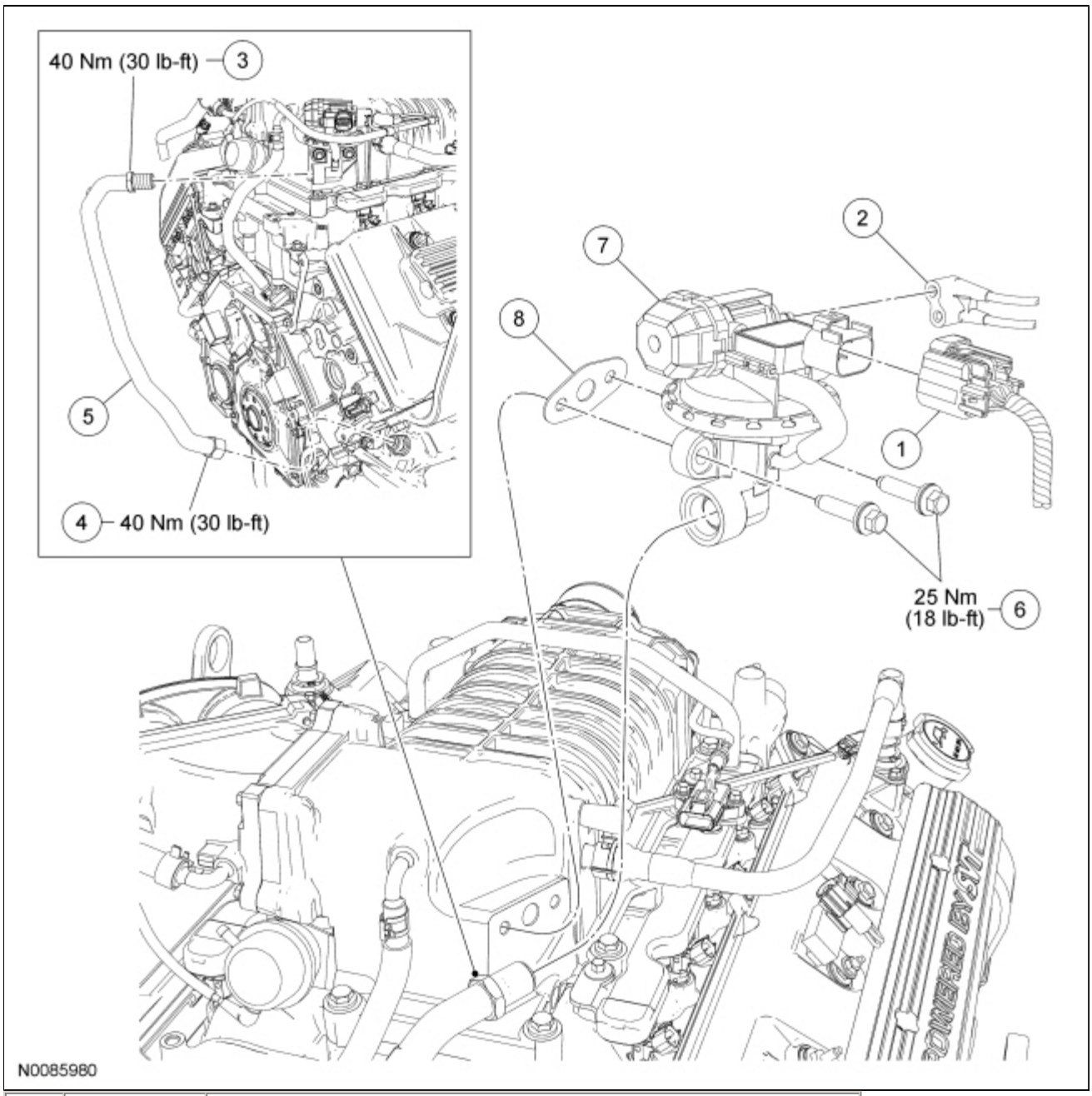
   Carefully clean the EGR system module sealing surfaces.

6. To install, reverse the removal procedure.
   - Install a new gasket with the raised circle facing away from the EGR system module.



Exhaust Gas Recirculation (EGR) System Components — Exploded View

5.8L (4V) Engine



Item	Part Number	Description
1	14A464	EGR system module electrical connector
2	9E498	Engine vacuum harness-to- EGR system module connector
3	—	EGR system module tube-to- EGR system module fitting (part of 9D477)

4	9F485	EGR system module tube-to-exhaust manifold fitting
5	9D477	EGR system module tube
6	W701232	EGR system module bolts (2 required)
7	9Y456	EGR system module
8	9D476	EGR system module gasket

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.

Fuel System Pressure Release

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.

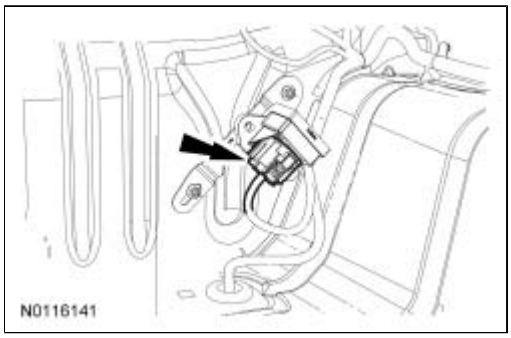
WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

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.

1. **NOTE:** Vehicle's with 3.7L or 5.0L engines have 1 Fuel Pump Control Module (FPCM) located on the driver's side of the spare tire stowage compartment.

   NOTE: Vehicle's with 5.8L engines have 2 Fuel Pump Control Module (FPCM) located on the driver's and passenger's side of the spare tire stowage compartment.

   Disconnect the Fuel Pump Control Module (FPCM) electrical connector(s).

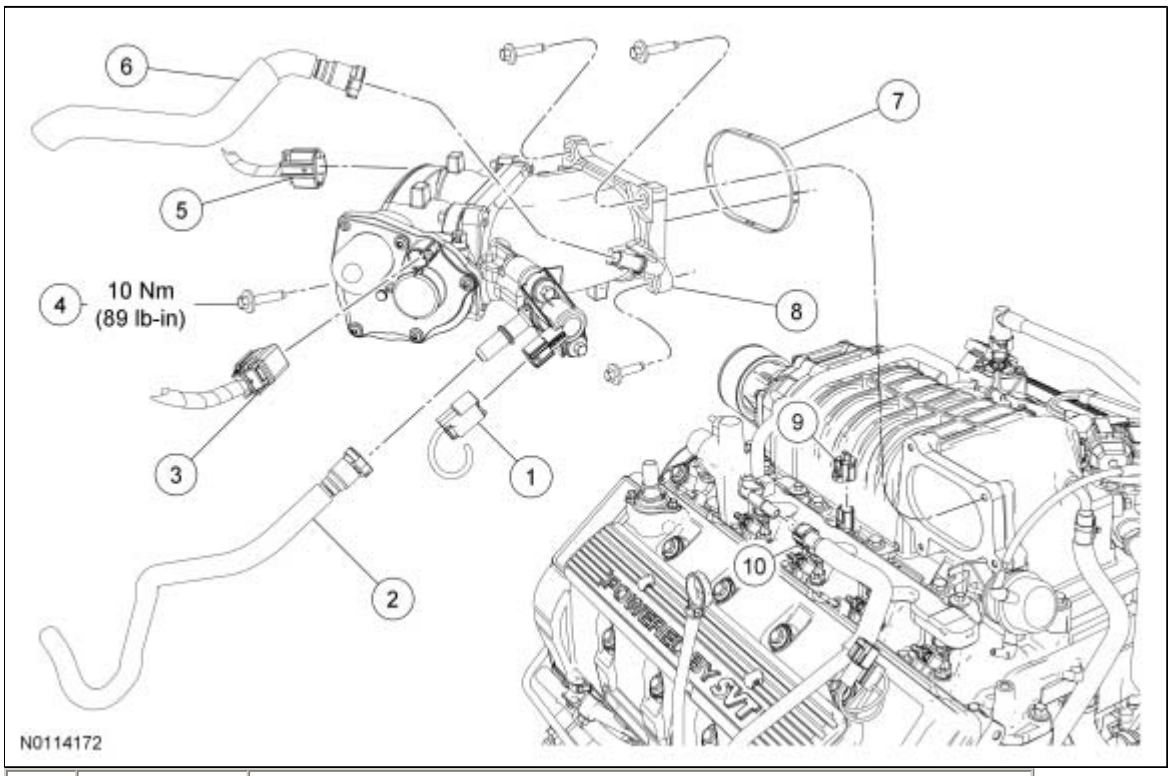
   

2. Start the engine and allow it to idle until it stalls.
3. After the engine stalls, crank the engine for approximately 10 seconds to make sure the fuel injection supply manifold pressure has been released.
4. Turn the ignition switch to the OFF position.
5. When the fuel system service is complete, connect the FPCM electrical connector(s).
6. **NOTE:** It may take more than one key cycle to pressurize the fuel system.

   Cycle the ignition key and wait 3 seconds to pressurize the fuel system. Check for leaks before starting the engine.
7. Start the vehicle and check the fuel system for leaks.

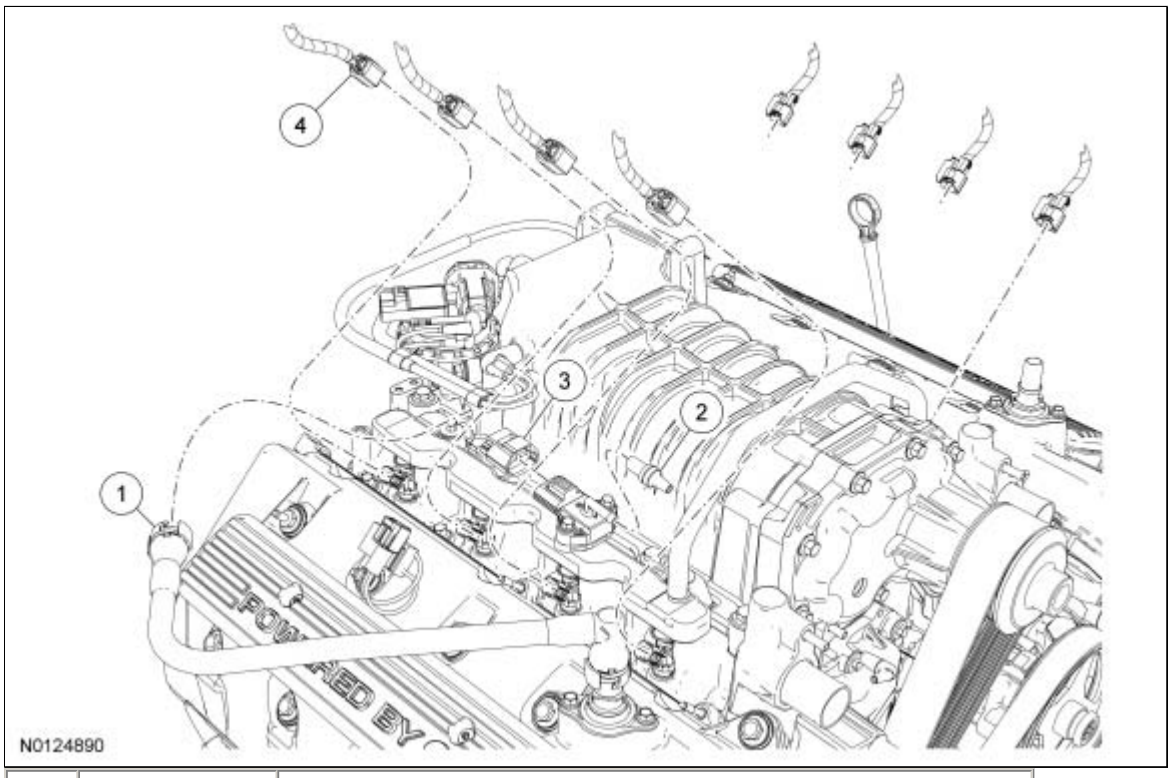
Fuel Rail and Fuel Injector — Exploded View

Throttle Body and Spacer



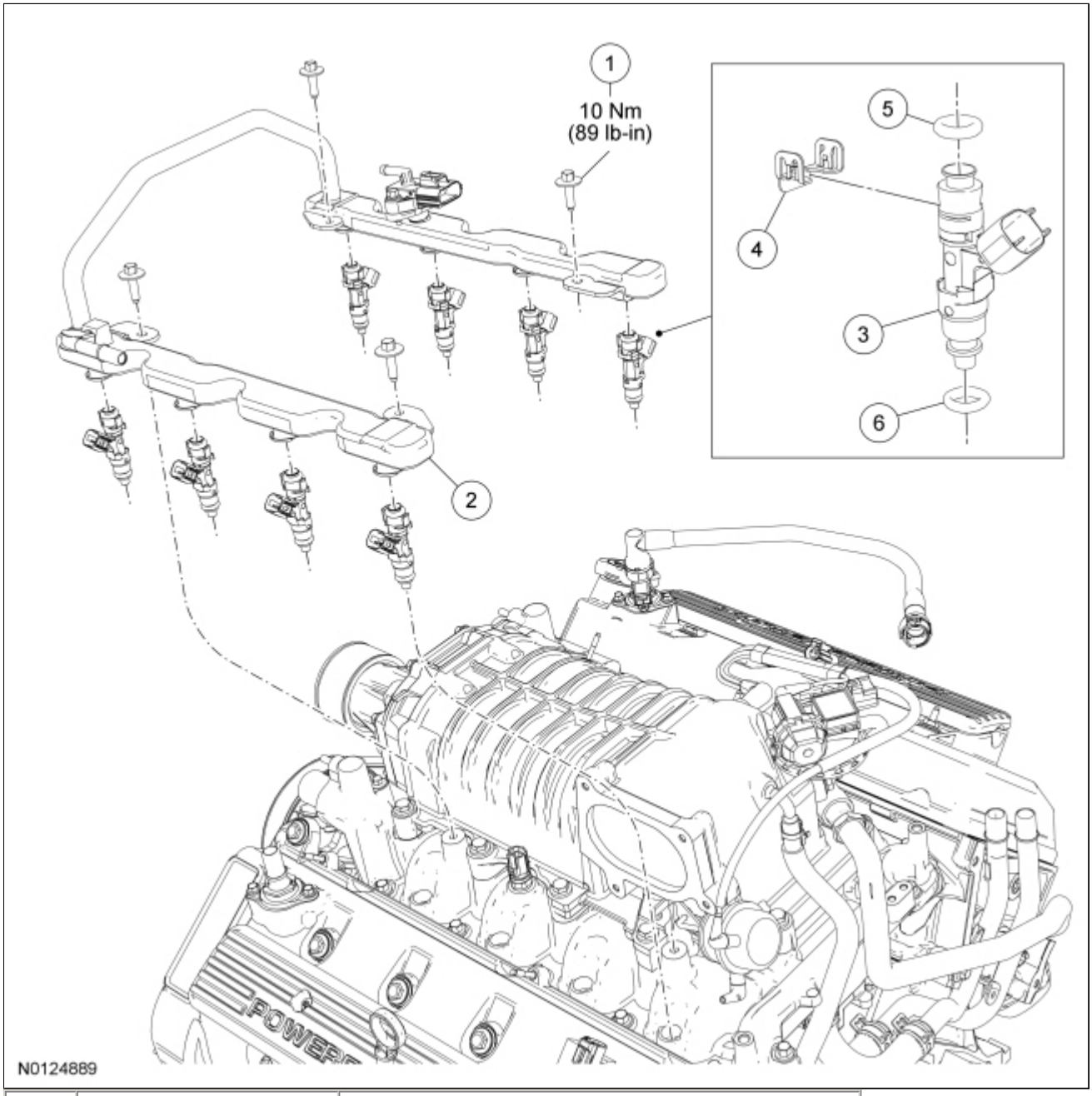
Item	Part Number	Description
1	Part of 12C508	Evaporative Emission (EVAP) canister purge valve electrical connector
2	9G271	EVAP canister purge valve vapor tube-to-Throttle Body (TB) spacer quick connect coupling
3	Part of 12C508	ETC electrical connector
4	N806154	TB spacer bolt (4 required)
5	Part of 12C508	Throttle Position (TP) sensor electrical connector
6	9C482	Brake booster-to- TB spacer quick connect coupling
7	9L437	TB spacer-to-Supercharger (SC) gasket
8	9E822	TB spacer assembly
9	Part of 12C508	Intake Air Temperature 2 (IAT2) sensor electrical connector
10	9J280	Fuel supply tube-to-fuel rail quick connect coupling

Electrical Connectors and Hoses



Item	Part Number	Description
1	6A664	PCV valve-to-Supercharger (SC) tube quick connect coupling
2	9E498	FRP and FRT sensor vacuum hose
3	Part of 12C508	FRP and FRT sensor electrical connector
4	Part of 12C508	Fuel injector electrical connector (8 required)

Fuel Rail and Injectors



Item	Part Number	Description
1	N804394	Fuel rail bolt (4 required)
2	9F792	Fuel rail
3	9F593	Fuel injector (8 required)
4	9C995	Fuel injector clip (8 required)
5	9229 (part of 9F593)	Upper fuel injector O-ring seal (8 required)
6	9229 (part of 9F593)	Lower fuel injector O-ring seal (8 required)

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.

General Specifications

Item	Specification
Fuel tank capacity	60.5 L (16 gal)
Fuel Pressure	
Key ON Engine OFF (KOEO)	-
3.7L, 5.0L	350-415 kPA (51-60 psi)
5.8L	188-550 kPa (27-80 psi)
Key ON Engine Running (KOER)	-
3.7L, 5.0L	350-415 kPA (51-60 psi)
5.8L	188-450 kPa (27-65 psi)

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.

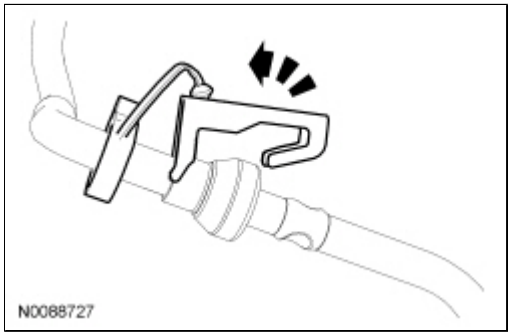
WARNING: When handling fuel, always observe fuel handling precautions and be prepared in the event of fuel spillage. Spilled fuel may be ignited by hot vehicle components or other ignition sources. Failure to follow these instructions may result in serious personal injury.

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.

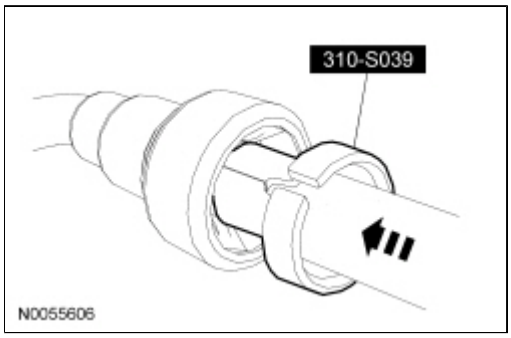
***NOTICE:* When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur.**

***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.**

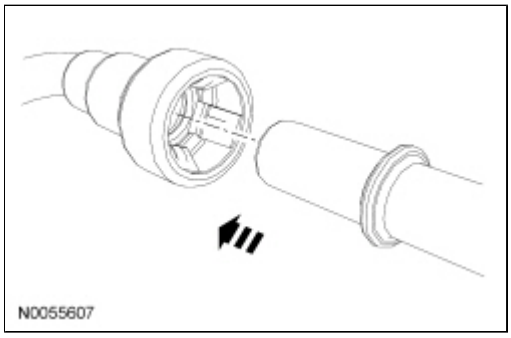
1. If servicing a liquid fuel tube spring lock coupling, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
3. If equipped, remove the fuel tube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



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

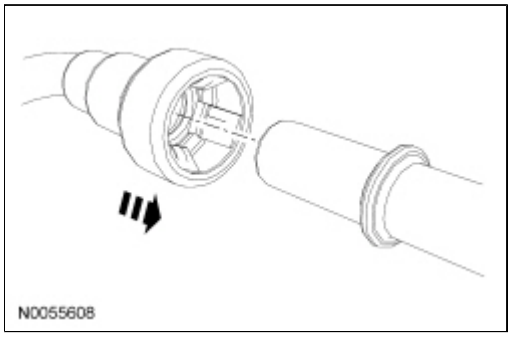


5. Separate the spring lock coupling from the tube fitting.

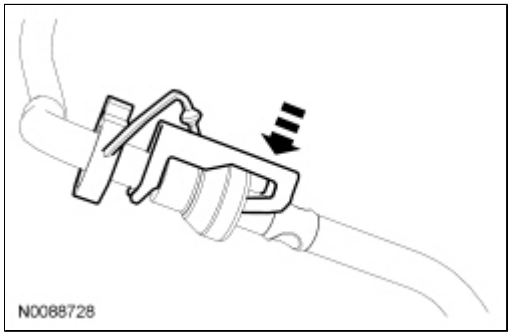


Connect

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 .

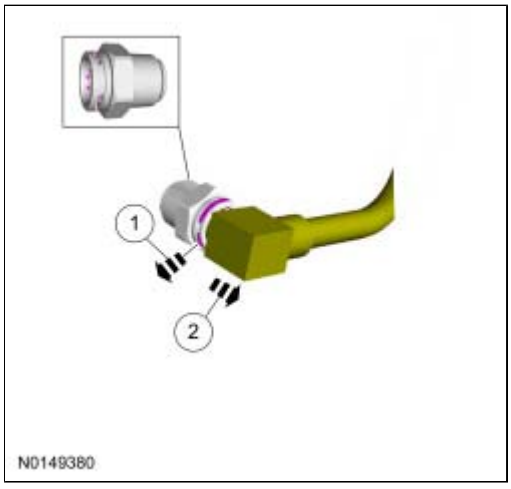
Disconnect - Type II

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.**

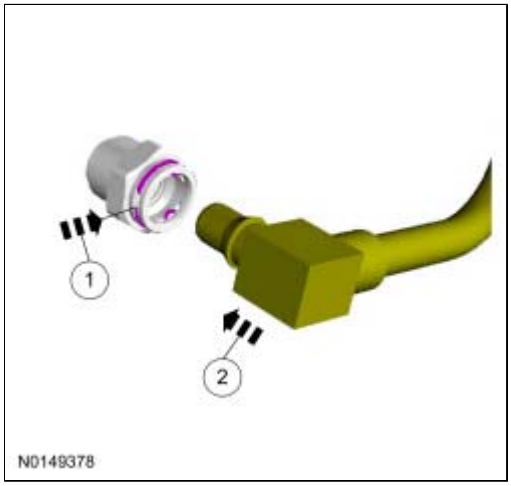
1. **NOTE:** Be careful not to damage the spring clip when removing from the coupling.

    1. Remove the spring clip.
    2. Separate the tube from the coupling.



Connect

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



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

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.

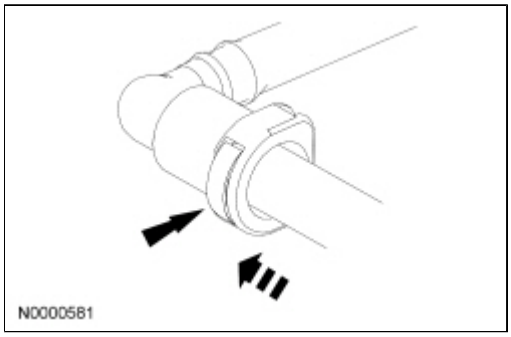
WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result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

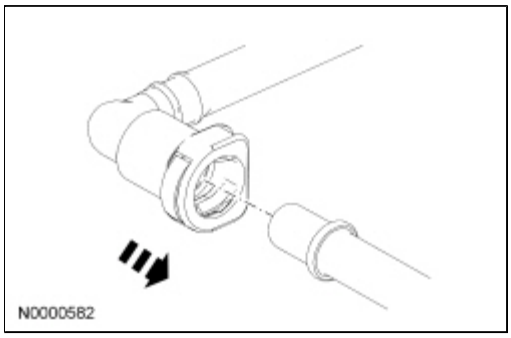
1. If servicing a liquid fuel tube, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
3. Depress the retainer clip and disconnect the quick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

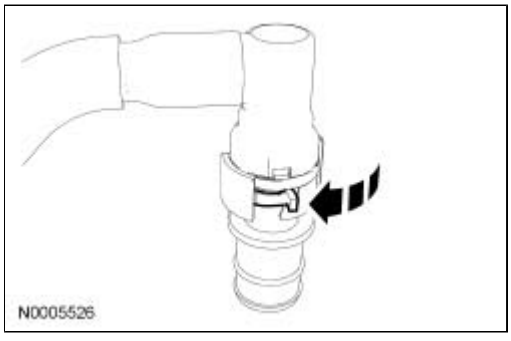
NOTICE: **When reusing liquid or vapor tube connectors, make sure to use compressed air to remove any foreign material from the connector retaining clip area before separating from the tube or damage to the tube or connector retaining clip can occur. Apply clean engine oil to the end of the tube before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

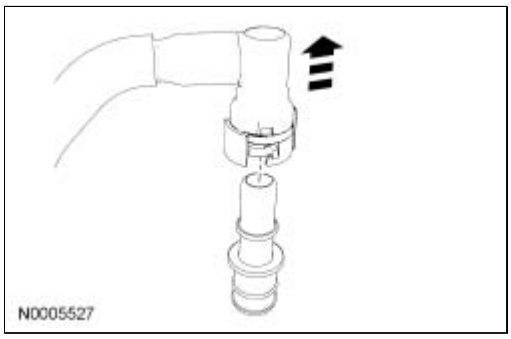
NOTICE: **Do not use any tools. The use of tools may cause a deformity in the clip components which may cause fuel leaks.**

1. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .

2. Release the retainer clip on the quick connect coupling.

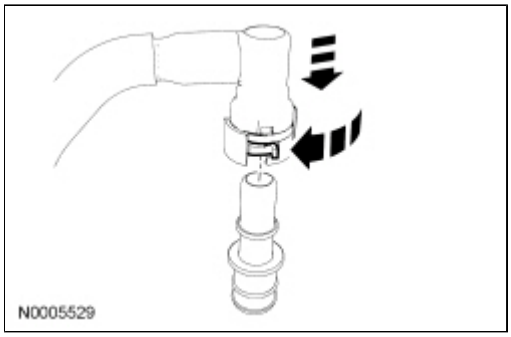


3. Disconnect the quick connect coupling from the fitting.



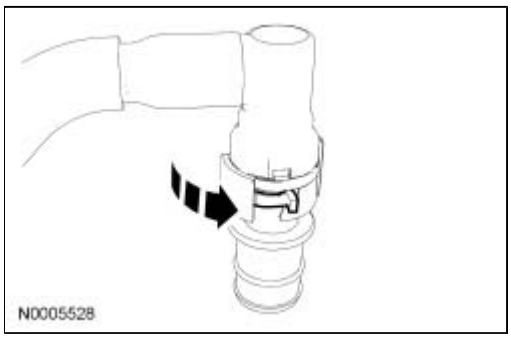
Connect — Type II

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.

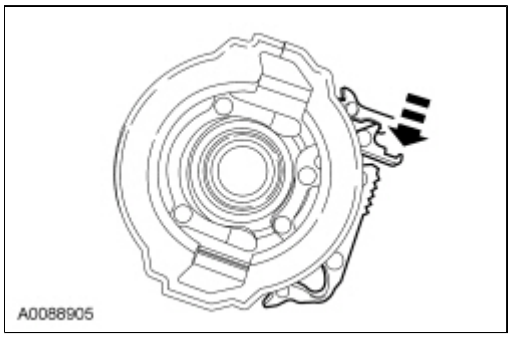
WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result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

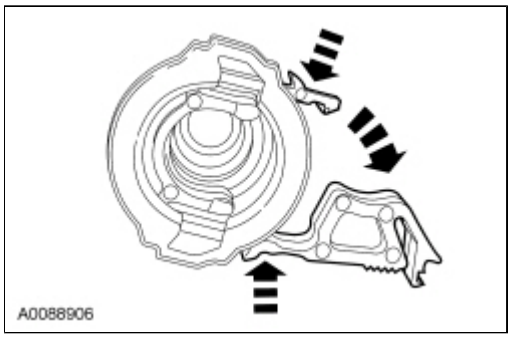
NOTICE: **Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.**

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

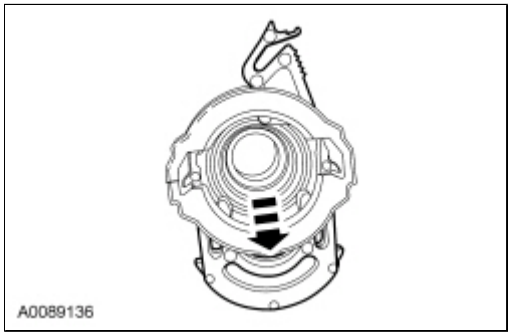
1. If servicing a liquid fuel tube, release the fuel system pressure. For additional information, refer to Fuel System Pressure Release in this section.
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
3. Release the quick connect coupling primary retainer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



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



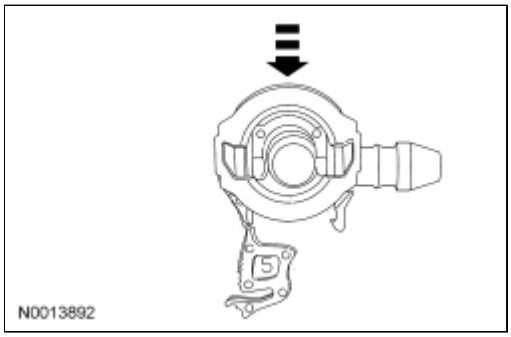
5. Position the retainer clip to the outward position and disconnect the quick connect coupling from the tube.



Connect — Type III

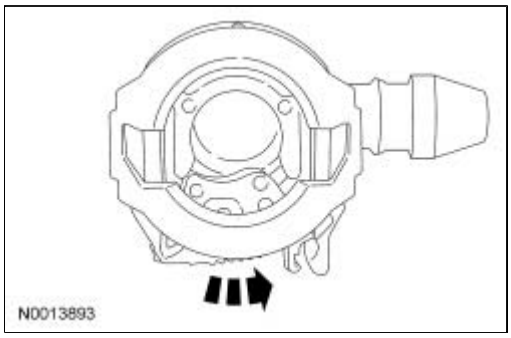
1. Install the quick connect coupling onto the tube until fully seated.
2. **NOTE:** Make sure the retainer clip clicks into place when installing.

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



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.



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.

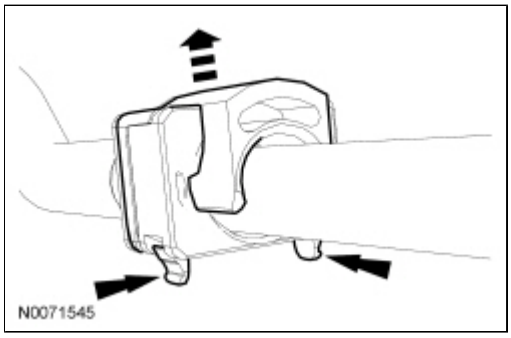
WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

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.**

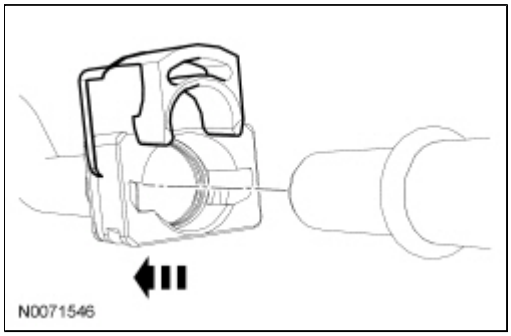
NOTICE: **Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.**

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.

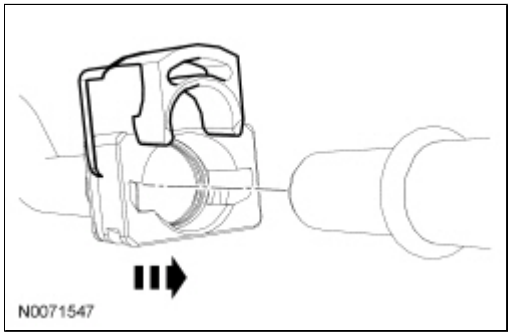


4. Disconnect the quick connect coupling from the tube.



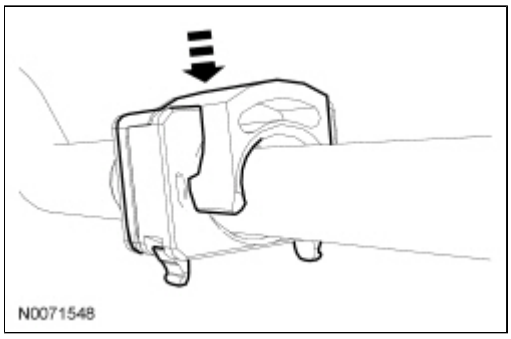
Connect — Type IV

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.**

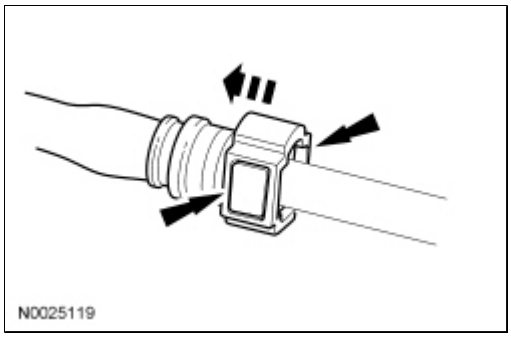
NOTICE: **Fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is essential that absolute cleanliness is observed when working with these components or component damage can occur. Always install blanking plugs to any open orifices or tubes.**

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.**

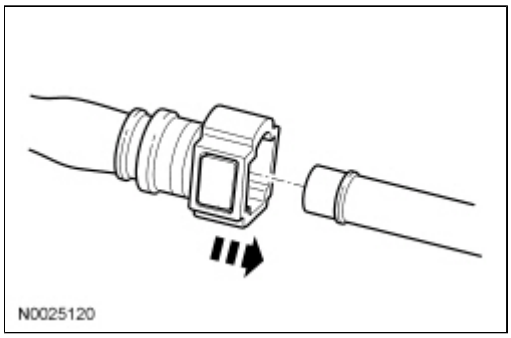
   Disconnect the fuel tube quick connect coupling.
   - Press the 2 fuel tube quick connect coupling buttons and pull the fuel tube to disconnect.



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.

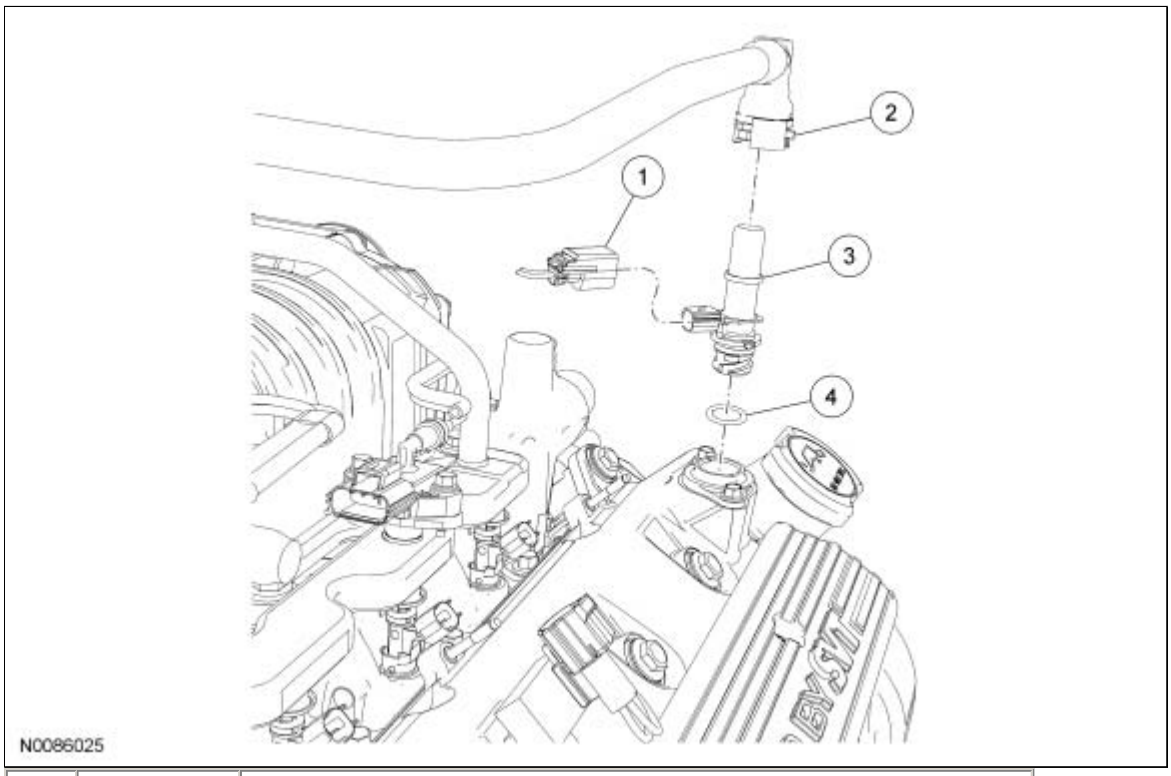


2. If servicing an EVAP or fuel-related component, connect the battery ground cable. For additional information, refer to Section 414-01 .

Torque Specifications

Description	Nm	lb-in
Fuel pump control module nuts	8	71
Fuel rail bolts	10	89
Throttle Body (TB) bolts	10	89
TB spacer bolts	10	89

5.8L (4V) Engine



Item	Part Number	Description
1	14A464	PCV valve electrical connector
2	—	Crankcase ventilation tube-to- PCV valve quick connect coupling (part of 6K817)
3	6A666	PCV valve
4	—	PCV valve O-ring seal (part of 6A666)

Removal

1. If equipped, disconnect the PCV valve electrical connector.
2. Disconnect the crankcase ventilation tube-to- PCV valve quick connect coupling, refer to Section 310-00 .
3. ***NOTICE:*** **A new PCV valve must be installed if removed. Upon removal, the plastic retaining ears of the PCV valve are sheared.**

   Rotate the PCV valve counterclockwise to remove from the valve cover.
   - Discard the PCV valve and O-ring seal.

Installation

1. **NOTE:** If equipped, make sure the PCV valve electrical connector is pointing in the correct position to allow the wiring harness to be connected. Incorrect installation would require removal and replacement of the valve.

   Install a new PCV valve and O-ring seal.
2. Connect the crankcase ventilation tube-to- PCV valve quick connect coupling, refer to Section 310-00 .
3. If equipped, connect the PCV valve electrical connector.