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DETROIT™

Service Information Bulletin

SUBJECT	DATE
EGR Actuator	May 2013

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0083	DD Platform	Description and Operation of the DD13 Exhaust Gas Recirculation Valve Actuator	Added Sonceboz actuator.
		Removal of the DD13 Exhaust Gas Recirculation Valve Actuator	
		Installation of the DD13 Exhaust Gas Recirculation Valve Actuator	
		Description and Operation of the DD15 and DD16 Exhaust Gas Recirculation Valve Actuator	
		Removal of the DD15 and DD16 Sonceboz Exhaust Gas Recirculation Valve Actuator	This is a new section.
		Installation of the DD15 and DD16 Sonceboz Exhaust Gas Recirculation Valve Actuator	

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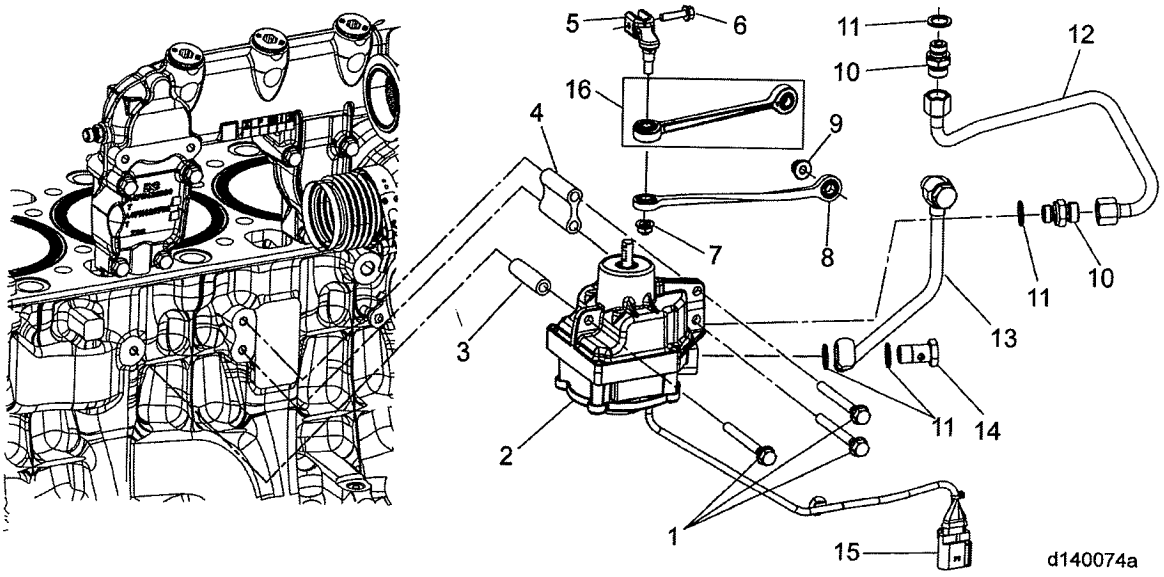
2 Description and Operation of the DD13 Exhaust Gas Recirculation Valve Actuator

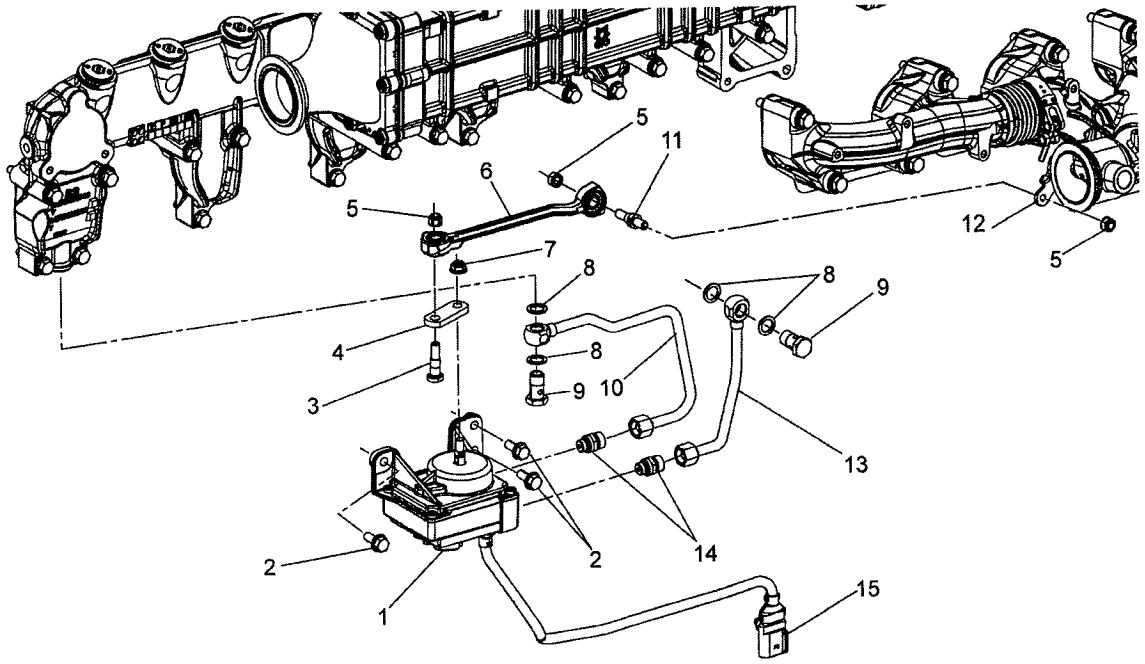
The Exhaust Gas Recirculation (EGR) system is controlled by the Motor Control Module (MCM) via a CAN signal which controls the EGR valve actuator. The EGR valve actuator then opens and closes the EGR valve to achieve the desired flow through the EGR cooler where the high temperature gas is cooled and then directed through the mixing pipe where it is mixed with air from the Charge Air Cooler (CAC) and directed into the cylinders.

When production of the DD13 began, a Delphi® actuator was utilized. Beginning with engine serial number HDE108907, the Sonceboz® actuator was introduced. Both actuators work the same, but are not interchangeable.



1. Bolt
2. Exhaust Gas Recirculation Valve Actuator
3. Spacer
4. Spacer
5. Lever
6. Bolt
7. Clamping Nut
8. Actuator Pull Rod (EPA07 Version)
9. Clamping Nut
10. Fitting
11. Seal Ring
12. Coolant Inlet Line
13. Coolant Outlet Line
14. Banjo Bolt
15. Harness Plug
16. Actuator Pull Rod (EPA10 Version)

Figure 1. DD13 Exhaust Gas Recirculation Valve Actuator and Related Parts



1. Exhaust Gas Recirculation Valve Actuator
2. Bolts
3. Stud
4. Lever
5. Nut
6. Actuator Pull Rod
7. Nut
8. Seal Rings
9. Banjo Bolt
10. Coolant Inlet Line
11. Stud
12. Exhaust Gas RecirculationValve Lever
13. Coolant Outlet Line
14. Coolant Fittings
15. Harness Plug

Figure 2. DD13 Sonceboz® Exhaust Gas Recirculation Valve Actuator and Related Parts

3 Removal of the DD13 Exhaust Gas Recirculation Valve Actuator

Remove as follows:

NOTE: The clamping bolt and actuator rod must remain installed to the actuator linkage when removing or installing the lock nut to avoid damage to the actuator valve gears.

1. Drain the coolant. Refer to section "Cooling System Drain Procedure".
2. Remove one nut connecting the Exhaust Gas Recirculation (EGR) valve actuator to the linkage and remove linkage from the actuator.

NOTICE: To prevent damage to the coolant inlet and outlet lines, hold the coolant line fittings with a wrench during line removal.

3. Remove the coolant line from the EGR valve actuator and cylinder block.
4. Remove the coolant line from the EGR valve actuator and water manifold.
5. Disconnect the EGR valve actuator electrical harness connector from the engine electrical harness.
6. Remove the EGR valve actuator from the cylinder block.
   a. For the Delphi actuator, remove three bolts and spacers from EGR valve actuator and remove actuator from the cylinder block.
   b. For the Sonceboz actuator, remove the three bolts from the EGR valve actuator and remove actuator from the cylinder block.

4 Installation of the DD13 Exhaust Gas Recirculation Valve Actuator

Install as follows:

NOTICE: If reusing the original Exhaust Gas Recirculation (EGR) valve actuator bracket bolts, always apply a small amount of copper-based anti-seize compound to the bolts. The original coating will burn off and that makes it necessary to reapply the anti-seize compound.

NOTICE: Ensure the bracket and exhaust manifold are at ambient temperature when the actuator bracket bolts are torqued.

NOTICE: Do not turn on the ignition power until all of the installation steps are completed.

1. Install the EGR valve actuator to cylinder block.
   a. For the Delphi actuator, install the EGR valve actuator to cylinder block with the bolts and two spacers. Torque bolts to 30 N•m (22 lb•ft).
   b. For the Sonceboz actuator, install the EGR valve actuator to cylinder block with the bolts. Torque bolts to 30 N•m (22 lb•ft).
2. Install the EGR valve actuator rod onto the actuator. Apply a small amount of copper based anti-seize compound to the nut threads and tighten. Torque nut to 20 N•m (15 lb•ft).

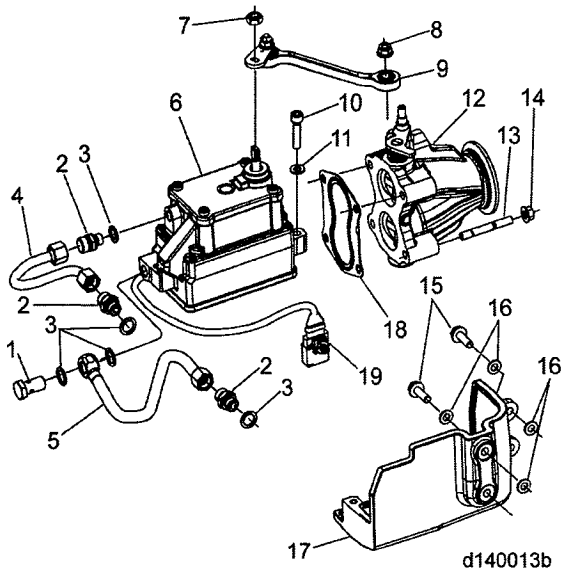
NOTICE: To prevent damage to the coolant inlet and outlet lines, hold the coolant line fittings with a wrench during line installation.

3. Install the coolant line to the EGR valve actuator and fitting on cylinder block. Tighten coolant line to EGR valve actuator to 25 N•m (18 lb•ft). Tighten coolant line to fitting on cylinder block 40 N•m (29 lb•ft).
4. Install the coolant line to the EGR valve actuator and water manifold. Tighten coolant line to 35 N·m (26 lb·ft).
5. Connect the EGR valve actuator to the engine wiring harness.
6. Fill the coolant system. Refer to section "Cooling System Fill Procedure".

5 Description and Operation of the DD15 and DD16 Exhaust Gas Recirculation Valve Actuator

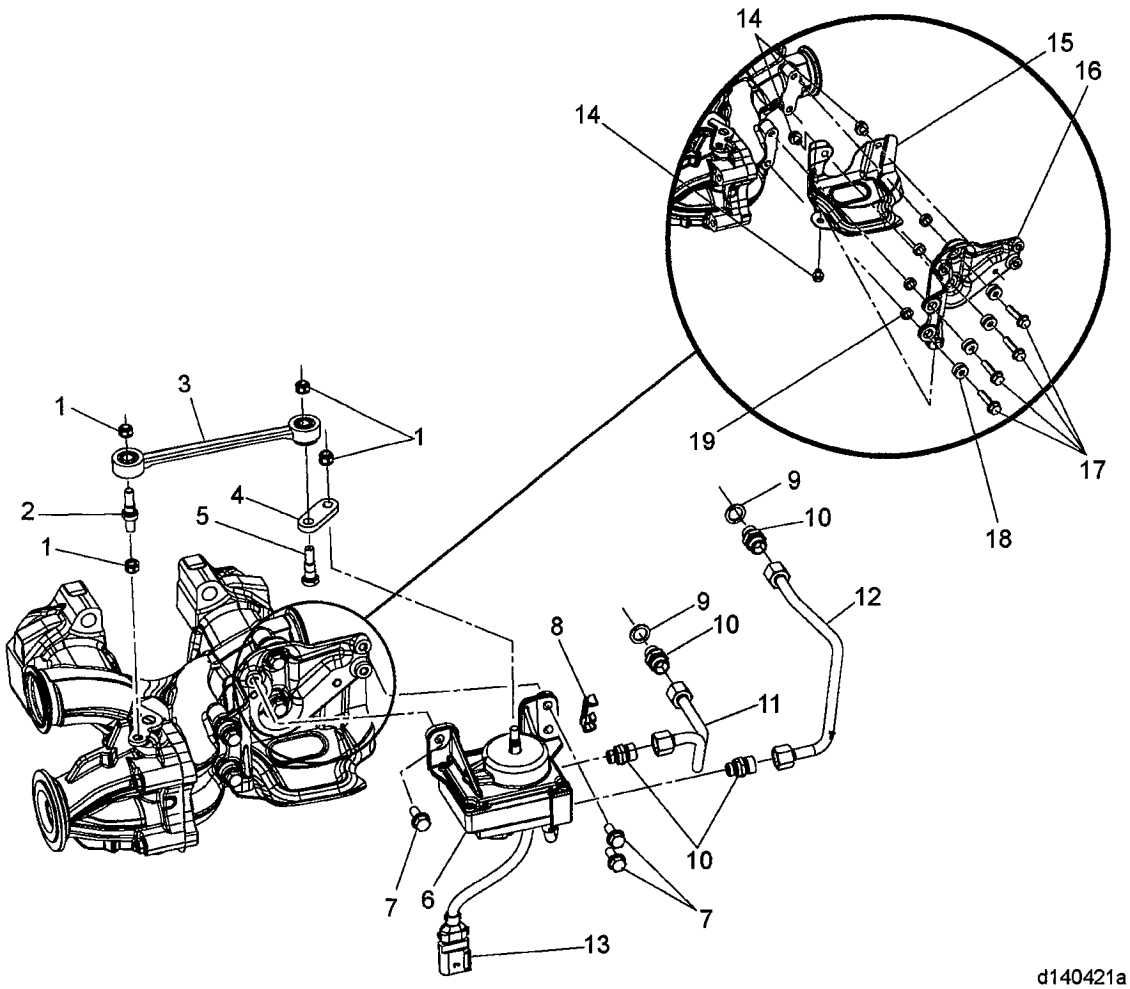
The Exhaust Gas Recirculation (EGR) system is controlled by the Motor Control Module (MCM) via a CAN signal which controls the EGR valve actuator. The EGR valve actuator then opens and closes the EGR valve to achieve the desired flow through the EGR cooler where the high temperature gas is cooled and then directed through the mixing pipe where it is mixed with air from the Charge Air Cooler (CAC) and then directed to the cylinders.

When production of the DD15 and DD16 began, a Delphi® actuator was utilized. Beginning with engine serial number HDE172591 the Sonceboz® actuator was introduced. Both actuators work the same, but are not interchangeable.



1. Banjo Bolt
2. Adaptor Fitting
3. Seal Ring
4. Coolant Outlet Line
5. Coolant Inlet Line
6. Exhaust Gas Recirculation Valve Actuator
7. Lock Nut
8. Clamping Nut
9. Exhaust Gas Recirculation Valve Actuator Pull Rod
10. Bolt
11. Washer
12. Exhaust Gas Recirculation Valve
13. Stud
14. Stud Nut
15. Bolt
16. Thermal Washer
17. Bracket
18. Gasket
19. Electrical Harness Connector

Figure 3. DD15 and DD16 Delphi® Exhaust Gas Recirculation Valve Actuator



1. Nut
2. Stud
3. Actuator Pull Rod
4. Actuator Lever
5. Stud
6. Exhaust Gas Recirculation Valve Actuator
7. Bolt
8. Retaining Clip
9. Sealing Washer
10. Coolant Line Fitting
11. Outlet Coolant Line
12. Inlet Coolant Line
13. Harness Plug

Figure 4. DD15 and DD16 Sonceboz® Exhaust Gas Recirculation Valve Actuator and Related Parts

6 Removal of the DD15 and DD16 Sonceboz® Exhaust Gas Recirculation Valve Actuator

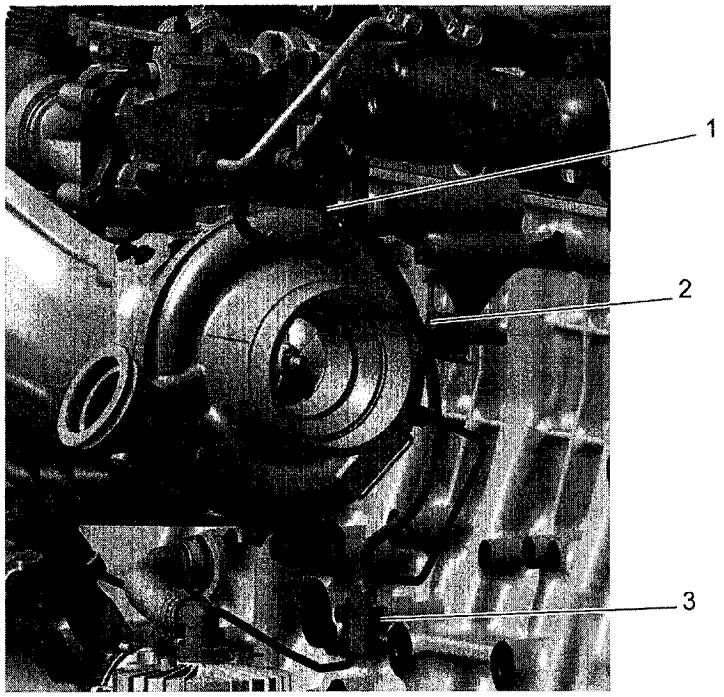
Remove as follows:

NOTICE: The clamping nut and actuator rod must remain installed to the actuator linkage when removing or installing the lock nut to avoid damage to the actuator valve gears.

1. Drain the coolant. Refer to section "Cooling System Drain Procedure".
2. Remove Exhaust Gas Recirculation (EGR) valve pull rod from the EGR actuator lever.

NOTICE: To prevent damage to the coolant inlet and outlet lines, hold the coolant line fittings with a wrench during line removal.

3. Remove the coolant outlet line from the EGR actuator adaptor fitting and water manifold adaptor fitting.
4. Remove the coolant inlet line from the EGR actuator and cylinder block adaptor fitting.
5. Disconnect the EGR Valve actuator electrical harness connector (3) from the engine electrical harness.



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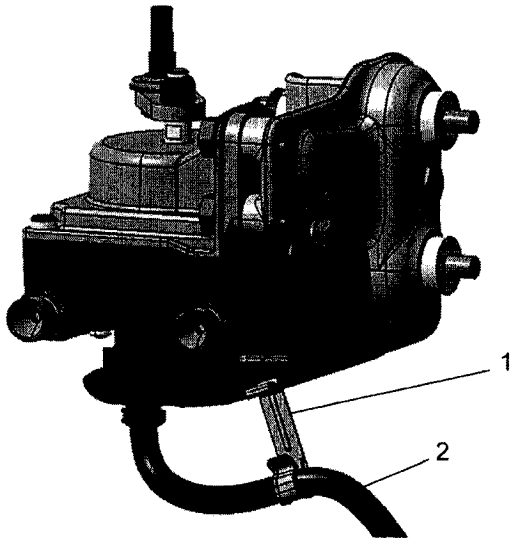
6. Unclip the EGR actuator electrical harness (3) from the clip behind the turbocharger.
7. Unclip the EGR actuator electrical harness (2) from the attachment point (1) below the actuator.



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NOTICE: To prevent damage to the coolant inlet and outlet lines, hold the adaptor fittings with a wrench during line removal.

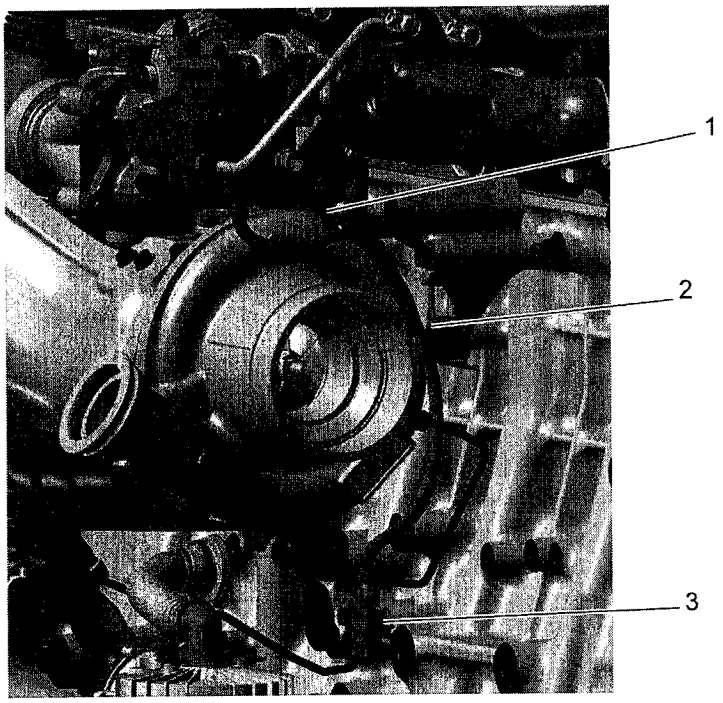
NOTE: DO NOT drop washers from the bottom of the brackets.

8. Remove the three bolts and washers from actuator and remove actuator from bracket.

7 Installation of the DD15 and DD16 Sonceboz® Exhaust Gas Recirculation Valve Actuator

Install as follows:

1. Install the Exhaust Gas Recirculation (EGR) actuator onto the mounting bracket with three bolts and washers. Torque bolts to 25 N•m (18 lb•ft).
2. Install the pull rod onto actuator and secure with one nut. Tighten nut to 25 N• m (18 lb• ft).
3. Position the EGR actuator electrical harness behind the turbo and connect it to the mounting point on the block (3).



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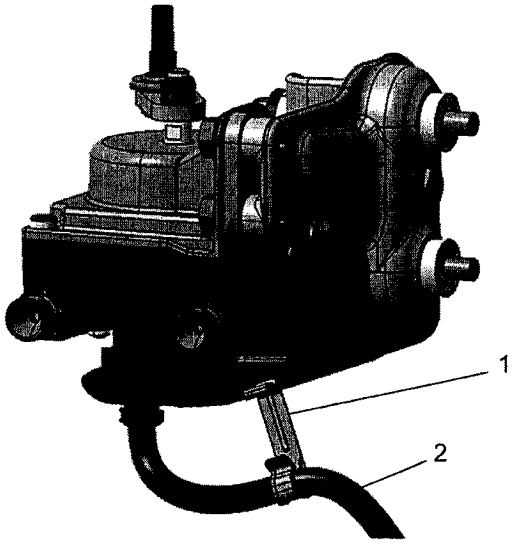
4. Connect the EGR actuator electrical harness to the engine electrical harness.
5. Clip the EGR actuator electrical harness to the attachment point behind the turbo (2).
6. Clip the EGR actuator electrical harness (2) to the attachment point (1) below the EGR actuator.



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7. If removed, install the coolant line fittings on the inlet and outlet coolant ports of the EGR actuator. Torque fittings to 25 N•m (18 lb•ft).

NOTICE: To prevent damage to the coolant inlet and outlet lines, hold the coolant line fittings with a wrench during line installation.

8. Install the coolant inlet line from the EGR actuator fitting to the cylinder block adaptor fitting. Torque fittings to 30 N•m (22 lb•ft).
9. Install the coolant outlet line from the EGR actuator fitting to the cylinder block adaptor fitting. Torque fittings to 30 N•m (22 lb•ft).
10. Fill the cooling system with coolant. Refer to section "Cooling System Fill Procedure".

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

11. Start the engine and allow the actuator to cycle completely. This will allow the system to learn the stops of the EGR valve.
12. Check for leaks.