

# Volvo D13 (GHG) 12.8L

## BG Diesel EGR System Service Instructions



Wear safety goggles to protect your eyes.



Wear Nitrile®, Neoprene® or PVC gloves to protect your hands.



Wear a long-sleeved shirt to protect your arms.

**IMPORTANT!** Read product Safety Data Sheet before handling any BG product.

### Adaptors required:

- BG EF686 EGR round 3.12" intake adaptor, PN E101-1684
- BG EF642 EGR round exhaust adaptor, PN E101-1673
- BG EF399 EGR manifold, PN E101-1645



BG EF686 EGR intake adaptor,  
PN E101-1684



BG EF642 EGR exhaust adaptor,  
PN E101-1673



BG EF399 EGR manifold,  
PN E101-1645

### Tools required:

- BG 64 Diesel VIA® supply tool, PN E101-1642
- Scan tool to open the EGR valve

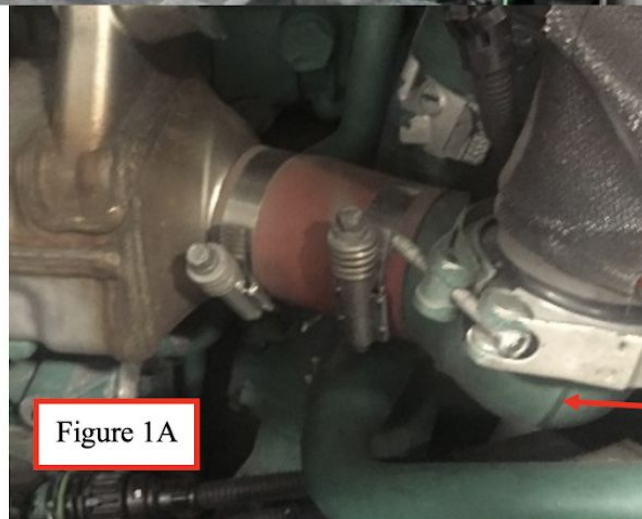
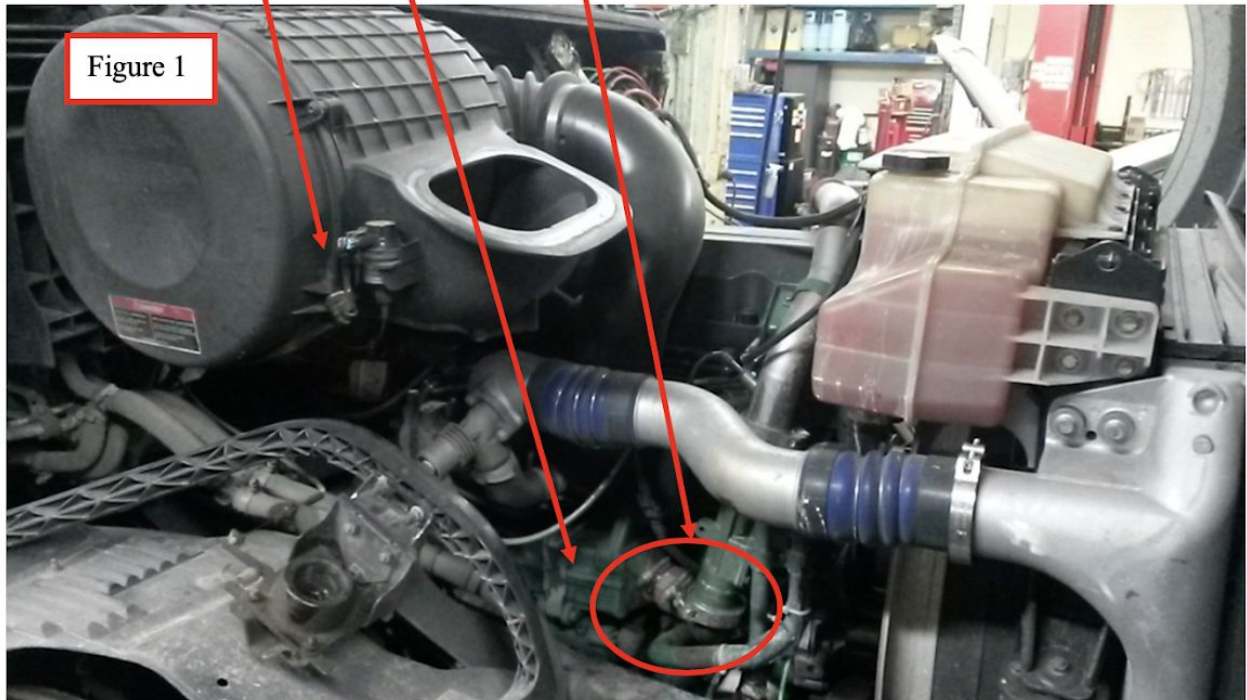
### EGR System Consists of:

- Hot side the EGR valve (before the EGR cooler), which allows for proper emissions control of  $\text{No}_x$  gases
- EGR cooler (controls temperature of exhaust gases to the air intake to the engine)
- EGR temperature sensor (measures the EGR cooler exhaust temperature and efficiency)

These components are critical for proper emissions control and must be cleaned on a regular basis for optimum efficiency.

### Locations of the EGR components:

- EGR valve ( behind air filter canister) (Figure 1)
- EGR Cooler (Figure 1)
  - EGR cooler outlet pipe (Figure 1)



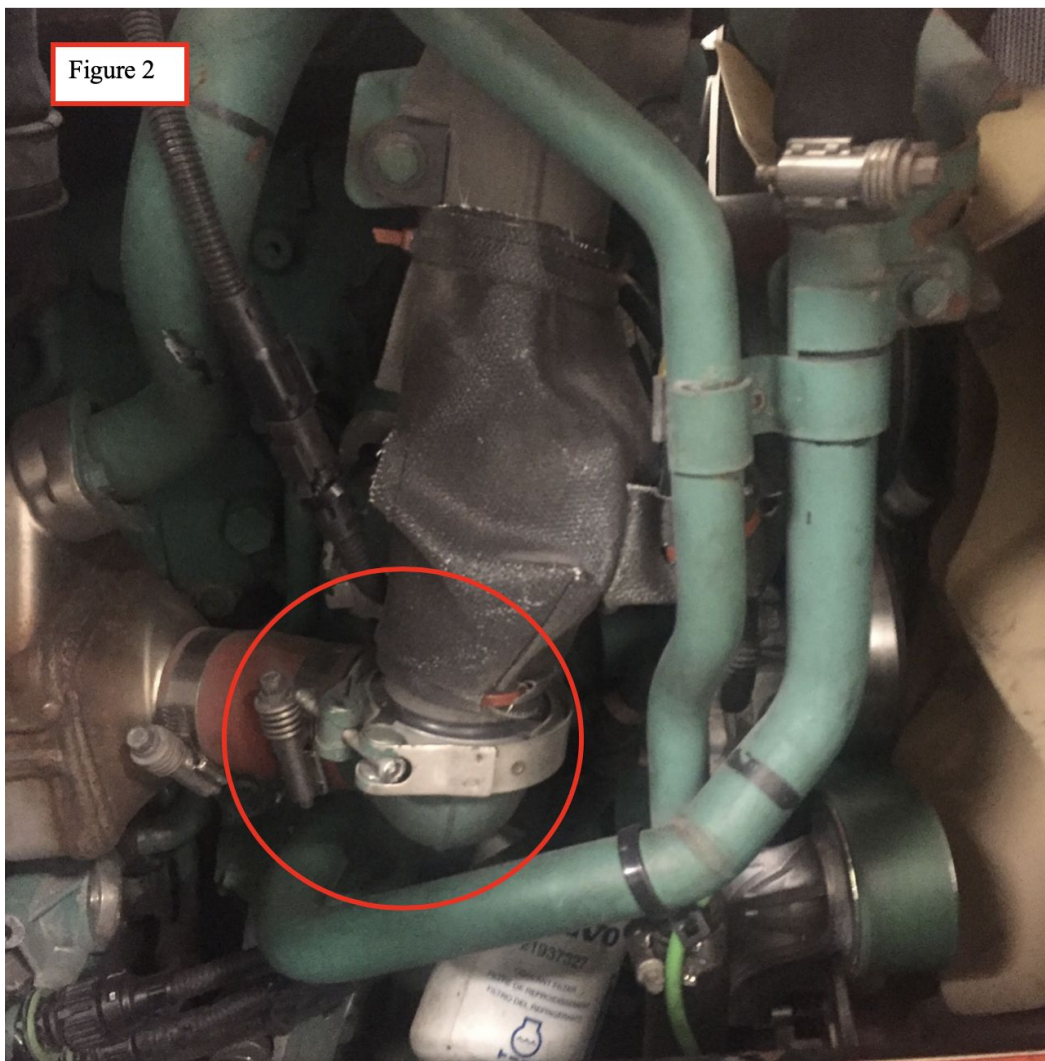
EGR Cooler  
Outlet Pipe

## EGR Inspection

**NOTE:** Before starting the EGR cleaning service, inspect the EGR components for severe deposits or clogging. Manual cleaning may be required (by scraping, sucking, wiping, etc.) before performing the service.

## Service procedure

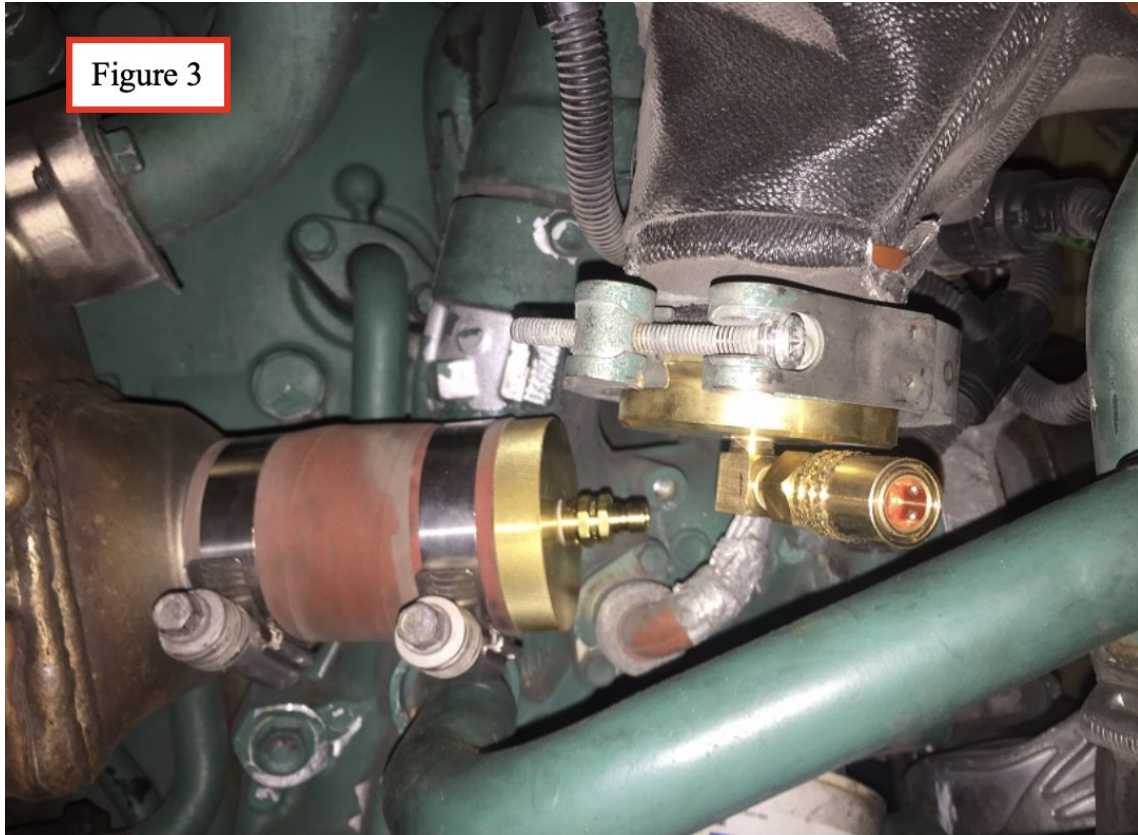
1. Add BG 245 Premium Diesel Fuel System Cleaner, PN 245, to vehicle's fuel tank.
2. Remove plastic engine cover and foam insulator.
3. Remove the clamps on the EGR cooler outlet pipe, which is located on the passenger side of the engine bay (Figure 2). Remove the EGR cooler outlet pipe and set aside.



**Quick Tip:** Place the EGR cooler outlet pipe into a container and fill the container with BG Diesel EGR System Cleaner, PN PD10, until submerged. This will aid in the dislodging of soot from the pipe while the EGR cleaning procedure is performed.



4. Install the BG EF686 intake adaptor using the existing clamps. Install the BG EF642 exhaust adaptor using the existing clamps and gasket (Figure 3).



5. Attach the BG EF399 manifold to the BG EF686 intake and BG EF642 exhaust adaptors. Attach the BG 64 Diesel VIA<sup>®</sup> supply tool to the BG EF399 manifold. Ensure that the air valve and fluid valve on the supply tool are closed (see supply tool instructions).
6. If the engine is hot, the EGR cooler must be cooled before treatment can start. Start the engine. Open the supply tool air valve, keeping the fluid valve closed. Turn the BG EF399 manifold to exhaust and flush EGR cooler with air for two minutes. Use the scan tool to open the EGR valve.
7. Unscrew fill cap and fill supply tool with 64 oz. (1.8 L) of BG Diesel EGR System Cleaner, PN PD10.
8. Reinstall the fill cap and hang supply tool from the hood latch. Connect shop air. Set air pressure on the tool to 40–50 psi.
9. Start the vehicle engine. Ensure the BG EF399 manifold is set to exhaust. Using the scan tool, command the EGR valve to open while the engine is operating. This will need to be repeated every minute during the exhaust portion of the service.
10. Open the air valve on the supply tool. Adjust the regulator to maintain the initial pressure of 40–50 psi. Then open the supply tool fluid valve.

**NOTE:** In some engines, it will be necessary to increase the engine speed to just over 1,000 RPM in order to keep the engine running. Otherwise, the engine will shut off after five minutes of idling.

11. After ½ of the fluid has been dispensed, close the fluid valve and let the air flow for an additional two minutes to flush deposits into the exhaust stream.
12. Turn the BG EF399 manifold to intake. Open supply tool fluid valve and continue service until the supply tool is empty.

**NOTE: If at any time during the intake service you hear a diesel knock sound, turn the BG EF399 manifold to off for two minutes. After two minutes, turn the BG EF399 manifold to intake and continue service.**

13. When supply tool is empty, let the vehicle operate for an additional five minutes and rev the engine several times to clear all residual fluid.
14. Repeat steps 7–13 using 32 oz. (946 mL) of BG Diesel EGR System Rinse, PN PD11.

**NOTE: For severe coking, it may be necessary to perform the service a second time to achieve desired results.**

15. Turn the fluid and air valves on the supply tool to the closed position. Turn the vehicle off. Detach shop air line and depressurize the supply tool by rotating the regulator knob counterclockwise.
16. After the EGR cooler outlet pipe has soaked for 15 minutes, clean the pipe using the BG Diesel EGR System Cleaner. Fluid can be saved for use on other EGR components if required.
17. Remove adaptors and reassemble vehicle components in the reverse order of removal.
18. After service, reset any engine codes. The vehicle should then be set to run a manual regeneration cycle. If that is not possible, the vehicle should be driven at highway speeds (or in the case of non-highway equipment operated under a load) for approximately 30 minutes. This is necessary to remove all of the residual fluid from the passages and cooler(s) and to combust any material that has reached the diesel oxidation catalyst (DOC) and diesel particulate filter (DPF). **This should be done as soon as possible after the service.**