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Service Information Bulletin

SUBJECT	DATE
Exhaust Gas Recirculation System - Cleaning	January 2013

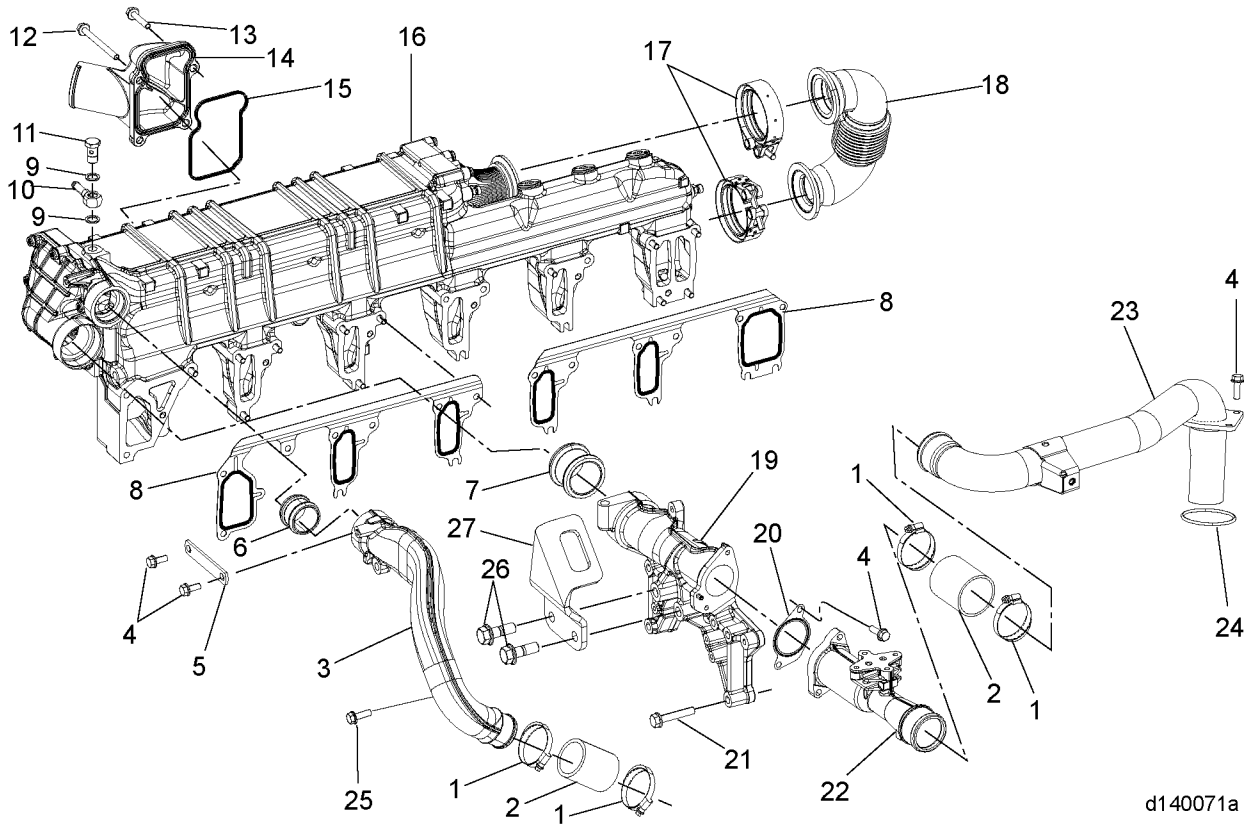
Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0083	DD Platform	Cleaning of the DD13 Exhaust Gas Recirculation System	Changed Steps to include cleaning of the turbocharger, exhaust manifold, and ATS
		Cleaning of the Turbo Compound DD15 and DD16 Exhaust Gas Recirculation System	
	Cleaning of the GHG14 DD15 Asymmetrical Turbocharger Exhaust Gas Recirculation System	This is a new section.	



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2 Cleaning of the DD13 Exhaust Gas Recirculation System



- | | |
|--------------------------------|---|
| 1. Clamp | 15. Seal |
| 2. Hose | 16. Exhaust Gas Recirculation Cooler Water Manifold |
| 3. Coolant Crossover Pipe | 17. Marmon Clamps |
| 4. Bolt | 18. EGR Hot Pipe |
| 5. Support | 19. Exhaust Gas Crossover Tube |
| 6. Coolant Connecting Tube | 20. Gasket |
| 7. Exhaust Gas Connecting Tube | 21. Bolt |
| 8. Gasket | 22. EGR Venturi |
| 9. Seal Ring | 23. Mixer Pipe |
| 10. Banjo Union | 24. Seal Ring |
| 11. Banjo Bolt | 25. Bolt |
| 12. Bolt | 26. Lifting Bracket Mounting Bolt |
| 13. Bolt | 27. Front Lifting Bracket |
| 14. Outlet Nipple | |

Figure 1. DD13 EGR Cooler Water Manifold and Related Parts

Check as follows:

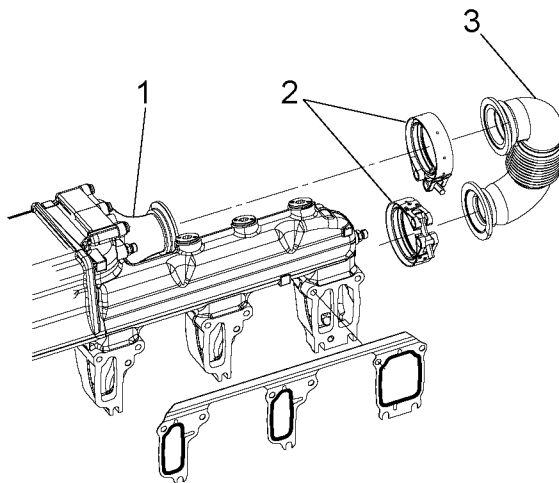
NOTICE: This procedure must be followed after replacing a fuel injector due to any failure that could cause high DOC temperature codes, excessive fuel, oil, or coolant to enter the exhaust system. Failure to perform this procedure could cause severe engine damage.



WARNING: PERSONAL INJURY

To avoid injury, never remove any engine component while the engine is running.

1. Remove the Marmon clamps (2) and Exhaust Gas Recirculation (EGR) hot pipe (3) and inspect for any signs of liquid or moisture. The EGR hot pipe (exhaust pipe) and EGR cooler water manifold inlet (1) should have a black dry soot residue inside.
 - a. If liquid or moisture is present in the pipe, Go to step 2.
 - b. If there is no sign of liquid or moisture in the EGR hot pipe or EGR cooler water manifold (1), install the hot pipe. No further action is required.



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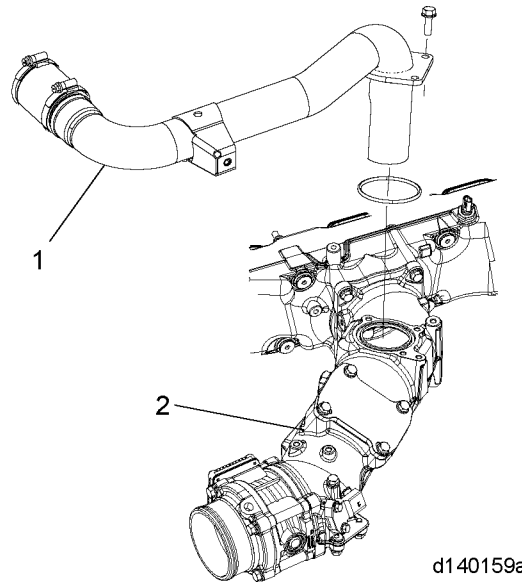
2. Remove the turbocharger from the exhaust manifold. Refer to section "Removal of the DD13 Turbocharger".
3. Remove the exhaust manifold from the engine. Refer to section "Removal of the Exhaust Manifold".

**WARNING: EYE INJURY**

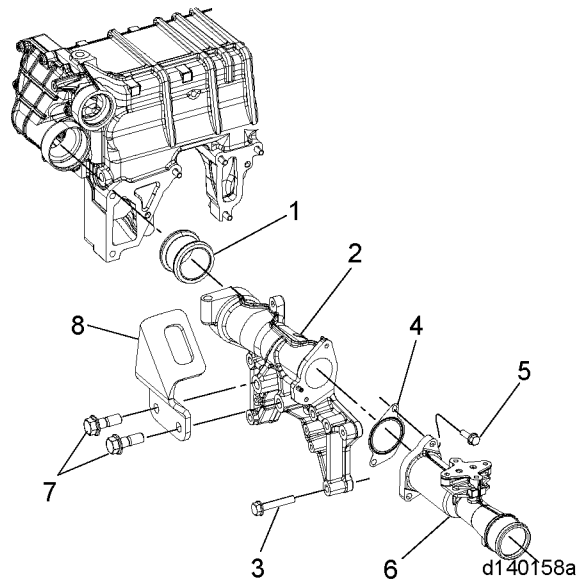
To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

NOTICE: Do not spin the turbocharger shaft for longer than 10 seconds to avoid damaging the shaft bearings.

4. Using a rubber-tipped blow gun, briefly blow compressed shop air into the turbo inlet and outlet as well as the exhaust manifold to clear any excess fuel, soot, and carbon.
5. Remove the mixer pipe (1) from the cold boost pipe (2). Refer to section "Removal of the Mixer Pipe".



6. For EPA07 engines, remove the exhaust gas crossover tube/lifting eye. Refer to section "Removal of the Exhaust Gas Recirculation Crossover Tube"
7. For EPA10/GHG14 engines remove the exhaust gas crossover tube (2) and the venturi (6). Refer to section "Removal of the Exhaust Gas Recirculation Crossover Tube" Refer to section "Removal of the Exhaust Gas Recirculation Venturi"



8. Place a towel over the outlet of the EGR cooler water manifold and retain it with a zip tie.



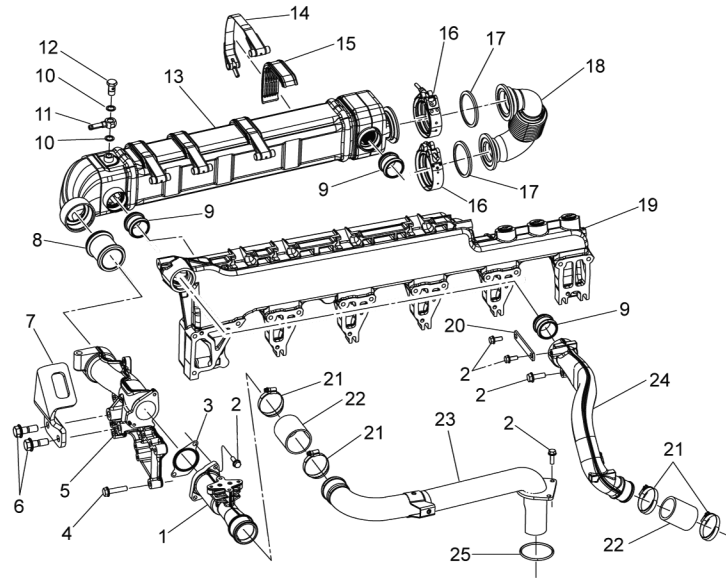
WARNING: EYE INJURY

To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

9. Using a rubber-tipped blow gun, blow compressed shop air into the individual tubes in the EGR cooler water manifold to clear any excess fuel, soot, and carbon.
10. If the EGR cooler water manifold has an excessive amount of build up that cannot be removed, replace the EGR cooler water manifold assembly. Refer to section "Removal of the DD13 Exhaust Gas Recirculation Cooler Water Manifold Assembly"

11. After performing the cleaning procedure, install the following:
 - Mixer pipe. Refer to section "Installation of the Mixer Pipe".
 - Exhaust Gas Recirculation Crossover Tube. Refer to section "Installation of the Exhaust Gas Recirculation Crossover Tube".
 - Venturi. Refer to section "Installation of the Exhaust Gas Recirculation Venturi".
 - Exhaust manifold. Refer to section "Installation of the Exhaust Manifold".
 - Turbocharger. Refer to section "Installation of the DD13 Turbocharger".
12. Check for ATS Codes.
 - a. For a 3250/0 DOC Outlet Temperature Very High Code, replace the DOC(s).
 - b. For a 3246/0 DPF Outlet Temperature Very High Code, replace the DPF(s).
13. Is there raw fuel leaking from the ATS clamps or drain hole?
 - a. Yes; Remove and disassemble the ATS. Let it drain and dry overnight.
 - b. No; Do not remove or disassemble the ATS.

3 Cleaning of the Turbo Compound DD15 and DD16 Exhaust Gas Recirculation Systems



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|-------------------------------|---------------------------|
| 1. EGR Venturi | 14. Strap |
| 2. Bolt | 15. Shim |
| 3. Gasket | 16. Marmon Clamp |
| 4. Bolt | 17. Metal Seal |
| 5. Exhaust Gas Crossover Tube | 18. EGR Hot Pipe |
| 6. Bolt | 19. Water Manifold |
| 7. Lifting Bracket | 20. Support |
| 8. Connecting Tube | 21. Clamp |
| 9. Connecting Tube | 22. Hose |
| 10. Seal Ring | 23. Mixer Pipe |
| 11. Banjo Union | 24. Coolant Delivery Pipe |
| 12. Banjo Bolt | 25. Seal Ring |
| 13. EGR Cooler | |

Figure 2. DD15 and DD16 Exhaust Gas Recirculation Cooler

Check as follows:

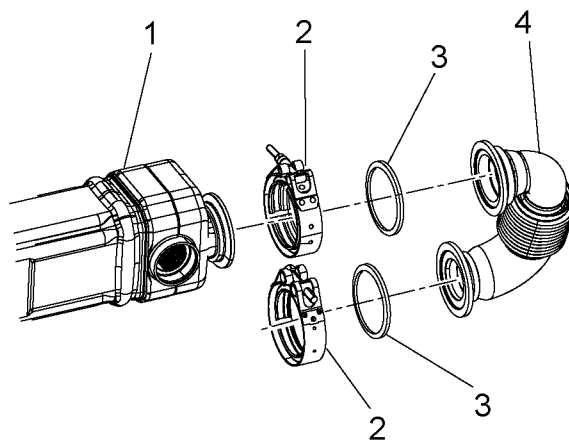
NOTICE: This procedure must be followed after replacing a fuel injector due to any failure that could cause high DOC temperature codes, excessive fuel, oil, or coolant to enter the exhaust system. Failure to perform this procedure could cause severe engine damage.



WARNING: PERSONAL INJURY

To avoid injury, never remove any engine component while the engine is running.

1. Remove the marmon clamps (2), EGR hot pipe (4) and gaskets (3) from the Exhaust Gas Recirculation (EGR) cooler (1) and inspect for any signs of liquid or moisture. The EGR hot pipe and EGR cooler inlet should have a black dry soot residue inside.
 - a. If liquid or moisture is present in the EGR hot pipe, Go to step 2.
 - b. If there is no sign of liquid or moisture in the EGR hot pipe, install the EGR cooler hot pipe. No further action is required. Refer to section "Removal of the Exhaust Gas Recirculation Hot Pipe".



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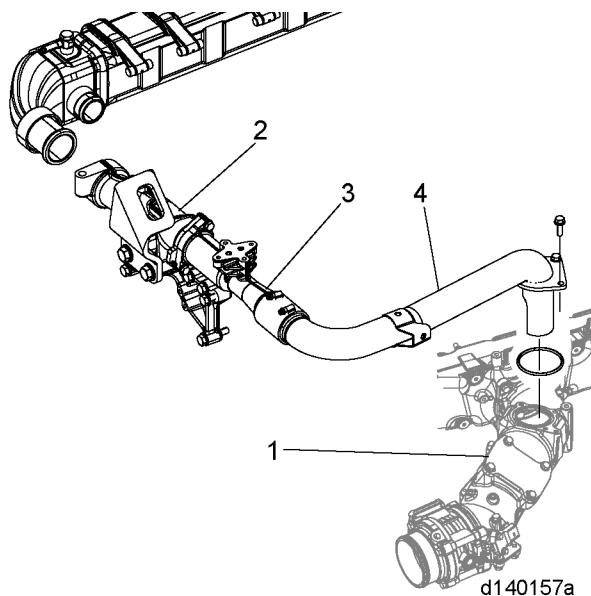
2. Remove the turbocharger from the exhaust manifold. Refer to section "Removal of the DD15 and the DD16 Turbocharger".
3. Remove the exhaust manifold from the engine. Refer to section "Removal of the Exhaust Manifold".

**WARNING: EYE INJURY**

To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

NOTICE: Do not spin the turbocharger shaft for longer than 10 seconds to avoid damaging the shaft bearings.

4. Using a rubber-tipped blow gun, briefly blow compressed shop air into the turbo inlet and outlet as well as the exhaust manifold to clear any excess fuel, soot, and carbon.
5. Remove the mixer pipe (4) from the cold boost pipe (1). Refer to section "Removal of the Mixer Pipe".



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6. Remove the exhaust gas crossover tube/lifting eye (2) and EGR venturi (3).
 - a. Refer to section "Removal of the Exhaust Gas Recirculation Crossover Tube".

- b. Refer to section "Removal of the Exhaust Gas Recirculation Venturi".
7. Place a towel over the outlet of the EGR cooler and retain it with a zip tie.

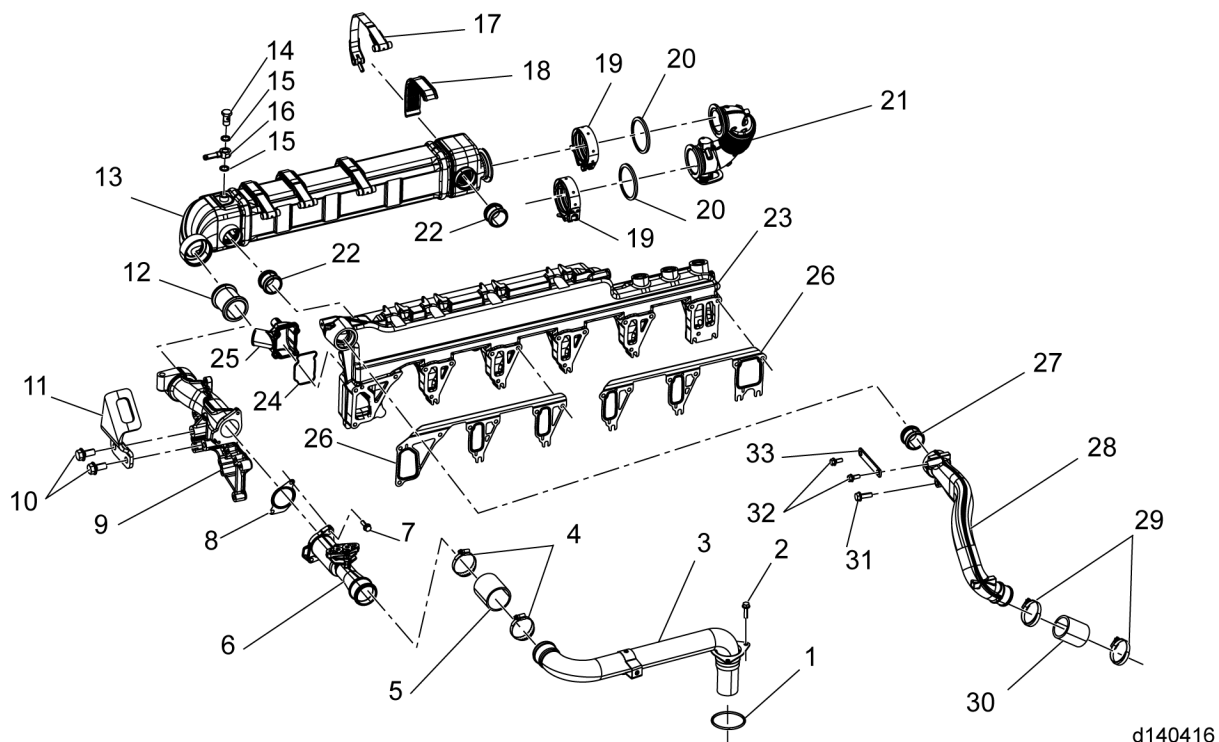


WARNING: EYE INJURY

To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

8. Using a rubber-tipped blow gun, blow compressed shop air into the individual tubes in the EGR cooler to clear any excess fuel, soot, and carbon.
9. If the cooler has an excessive amount of buildup that cannot be removed, replace the EGR cooler. Refer to section "Installation of the DD15 and DD16 Exhaust Gas Recirculation Cooler"
10. After performing the cleaning procedure, install the following:
 - Mixer pipe. Refer to section "Installation of the Mixer Pipe".
 - For EPA07 engines, install the exhaust gas crossover tube/lifting eye. Refer to section "Installation of the Exhaust Gas Recirculation Crossover Tube".
 - For EPA10/GHG14 engines install the exhaust gas crossover tube, and the venturi. Refer to section "Installation of the Exhaust Gas Recirculation Crossover Tube" Refer to section "Installation of the Exhaust Gas Recirculation Venturi".
 - Exhaust manifold. Refer to section "Installation of the Exhaust Manifold".
 - Turbocharger. Refer to section "Installation of the DD15 and the DD16 Turbocharger".
11. Check for ATS Codes.
 - a. For a 3250/0 DOC Outlet Temperature Very High Code, replace the DOC(s).
 - b. For a 3246/0 DPF Outlet Temperature Very High Code, replace the DPF(s).
12. Is there raw fuel leaking from the ATS clamps or drain hole?
 - a. Yes; Remove and disassemble the ATS. Let it drain and dry overnight.
 - b. No; Do not remove or disassemble the ATS.

4 Cleaning of the GHG14 DD15 Asymmetrical Turbocharger Exhaust Gas Recirculation System



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| 1. Seal Ring | 18. Shim |
| 2. Bolt | 19. Marmon Clamps |
| 3. Mixer Pipe | 20. Metal Seal Ring |
| 4. Marmon Clamps | 21. EGR Valve/Hot Pipe |
| 5. Connector Hose | 22. Connecting Tube |
| 6. Venturi Pipe | 23. Water Manifold |
| 7. Bolt | 24. Seal |
| 8. Gasket | 25. Coolant Outlet Pipe |
| 9. EGR Crossover Pipe | 26. Water Manifold Gasket |
| 10. Bolt | 27. Connecting Tube |
| 11. Lifting Bracket | 28. Coolant Crossover Pipe |
| 12. Connecting Tube | 29. Clamps |
| 13. EGR Cooler | 30. Connector Hose |
| 14. Banjo Bolt | 31. Bolt |
| 15. Seal Ring | 32. Bolts |
| 16. Banjo Union | 33. Support Bracket |
| 17. Strap | |

Figure 3. GHG14 DD15 AT Exhaust Gas Recirculation Cooler and Related Parts

Check as follows:

NOTICE: This procedure must be followed after replacing a fuel injector due to any failure that could cause high DOC temperature codes, excessive fuel, oil, or coolant to enter the exhaust system. Failure to perform this procedure could cause severe engine damage.



WARNING: PERSONAL INJURY

To avoid injury, never remove any engine component while the engine is running.

1. Remove the EGR Valve Actuator Tow Bar. Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger Exhaust Gas Recirculation Valve Actuator Pull Rod"
2. Remove the EGR Valve/Hot Pipe. Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger Exhaust Gas Recirculation Valve/Hot Pipe"
 - a. If liquid or moisture is present in the EGR Valve/Hot pipe, Go to step 3.
 - b. If there is no sign of liquid or moisture in the EGR hot pipe, install the EGR cooler hot pipe. No further action is required. Refer to section "Removal of the Exhaust Gas Recirculation Hot Pipe"
3. Remove the turbocharger from the exhaust manifold. Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger"
4. Remove the exhaust manifold from the engine. Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger Exhaust Manifold"

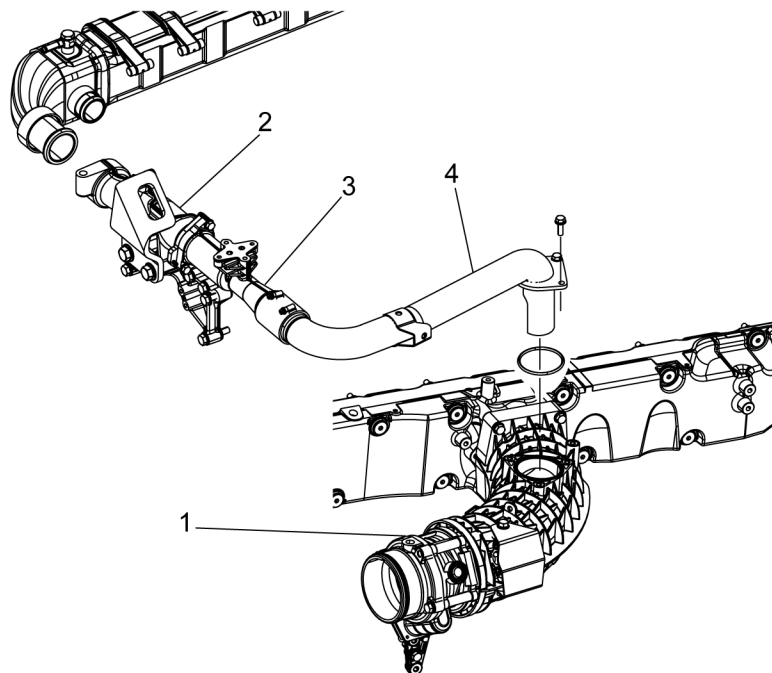


WARNING: EYE INJURY

To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

NOTICE: Do not spin the turbocharger shaft for longer than 10 seconds to avoid damaging the shaft bearings.

5. Using a rubber-tipped blow gun, briefly blow compressed shop air into the turbo inlet and outlet as well as the exhaust manifold to clear any excess fuel, soot, and carbon.
6. Remove the mixer pipe (4) from the cold boost pipe (1). Refer to section "Removal of the Mixer Pipe"



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7. Remove the exhaust gas crossover tube/lifting eye (2) and EGR venturi (3).
 Refer to section "Removal of the Exhaust Gas Recirculation Crossover Tube"
 Refer to section "Removal of the Exhaust Gas Recirculation Venturi"

8. Place a towel over the outlet of the EGR cooler and retain it with a zip tie.

**WARNING: EYE INJURY**

To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.

9. Using a rubber-tipped blow gun, blow compressed shop air into the individual tubes in the EGR cooler to clear any excess fuel, soot, and carbon.
10. If the cooler has an excessive amount of buildup that cannot be removed, replace the EGR cooler. Refer to section "Installation of the DD15 and DD16 Exhaust Gas Recirculation Cooler"
11. After performing the cleaning procedure, install the following:
 - a. Mixer pipe. Refer to section "Installation of the Mixer Pipe"
 - b. Exhaust gas crossover tube. Refer to section "Installation of the Exhaust Gas Recirculation Crossover Tube"
 - c. Venturi. Refer to section "Installation of the Exhaust Gas Recirculation Venturi"
 - d. Exhaust manifold. Refer to section "Installation of the Exhaust Manifold"
 - e. Turbocharger. Refer to section "Installation of the GHG14 DD15 Asymmetrical Turbocharger"
12. Check for ATS Codes.
 - a. For a 3250/0 DOC Outlet Temperature Very High Code, replace the DOC(s).
 - b. For a 3246/0 DPF Outlet Temperature Very High Code, replace the DPF(s).
13. Is there raw fuel leaking from the ATS clamps or drain hole?
 - a. Yes; Remove and disassemble the ATS. Let it drain and dry overnight.
 - b. No; Do not remove or disassemble the ATS.