SAFETY RECALL

CONVENTIONAL TRUCKS CONNECTING ROD INSPECTION

CAMPAIGN NO: AA860
DATE: 3-12-2018
REFERENCE: QA-180227-N1

SUBJECT VEHICLES: 11MY-12MY Conventional Trucks equipped with a J08 engine

Note: ***Refer to the appropriate Vehicle Identification Number in the warranty system to determine vehicle eligibility.***

OVERVIEW:
Excessive debris adheres to the heating coil causing an overcurrent condition thereby overheating the parts during the wrist pin bushing installation process, thus producing improper wrist pin bushing retention in the connecting rod. If the vehicle remains in operation with the condition where the wrist pin bushing has shifted in the connecting rod, excessive wear and abnormal noise will occur. If the condition continues, the connecting rod may break and cause loss of motive power and may increase the possibility of a crash. The following procedure will provide direction for inspecting the manufacturing stampings of the connecting rods, and if within the suspect build range, such connecting rods will be replaced.

NEW VEHICLES IN DEALERSHIP INVENTORY
As required by Federal law (49 Code of Federal Regulations §577.13), dealerships are not to deliver any new vehicles in their inventory that are involved in a Safety Recall unless the vehicle has been remedied. Refer to the appropriate Vehicle Identification Number (VIN) list to determine vehicle eligibility.

BEFORE YOU BEGIN:

- Read and understand all instructions and procedures before you begin the work.
- Read and follow all **WARNINGS** and **NOTICES** set forth in this publication. These alerts help to avoid damage to components, serious personal injury, or both.
- Park the vehicle on a flat, level and solid surface.
- Place the gear shift lever in "Neutral" or "Park".
- Apply the parking brake firmly and confirm parking brake activation.
- Turn off the engine and remove the key from the ignition switch.
- Always wear safety glasses or goggles to protect your eyes.
- Place wheel chocks in front of and behind all the
- wheels to prevent the vehicle from moving.

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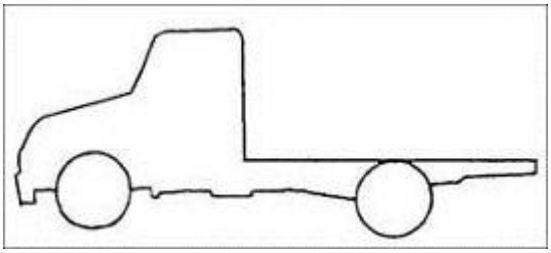
PARTS: (For Inspection Only)

PART NUMBER	PART DESCRIPTION	QUANTITY
SZ43014003	Soft Washer	1

VEHICLE PREPARATION:

1. Park the vehicle on a flat, level and solid surface.



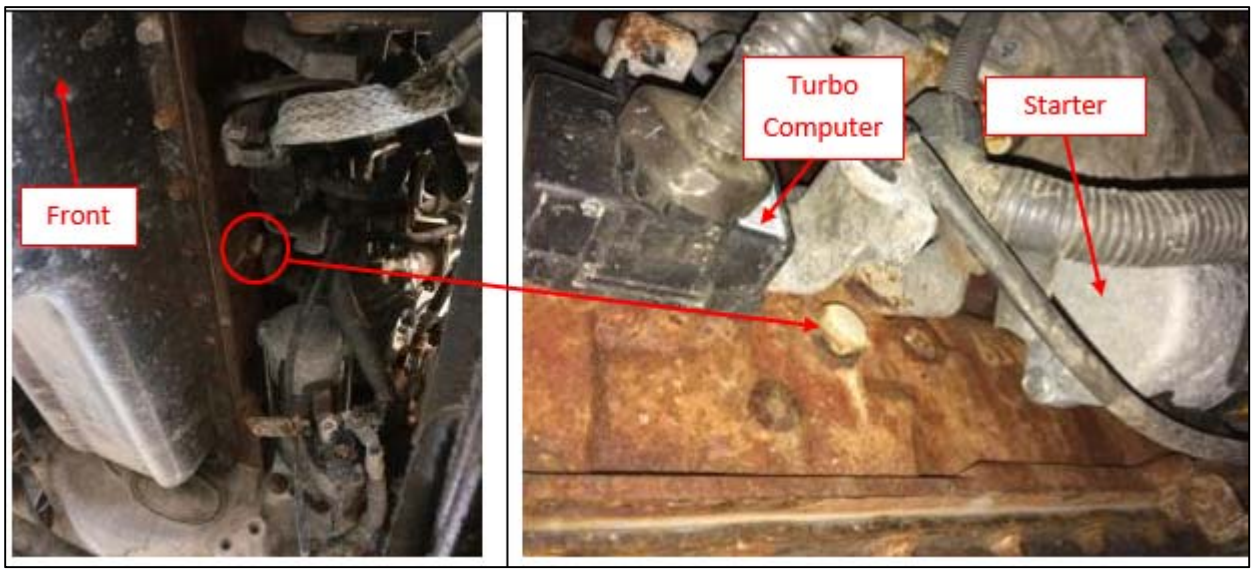
2. Confirm the engine is stopped, the ignition switch is in the off (LOCK) position, and the key is removed.

3. Apply the parking brake.

4. Chock all of the wheels.

INSPECTION PROCEDURE:

1. From below the driver's side of the vehicle, locate the 22mm hex head plug on the side of the engine block between the turbo computer and the starter. Remove the plug and retain for reinstallation. Discard the soft washer on the plug after removal.



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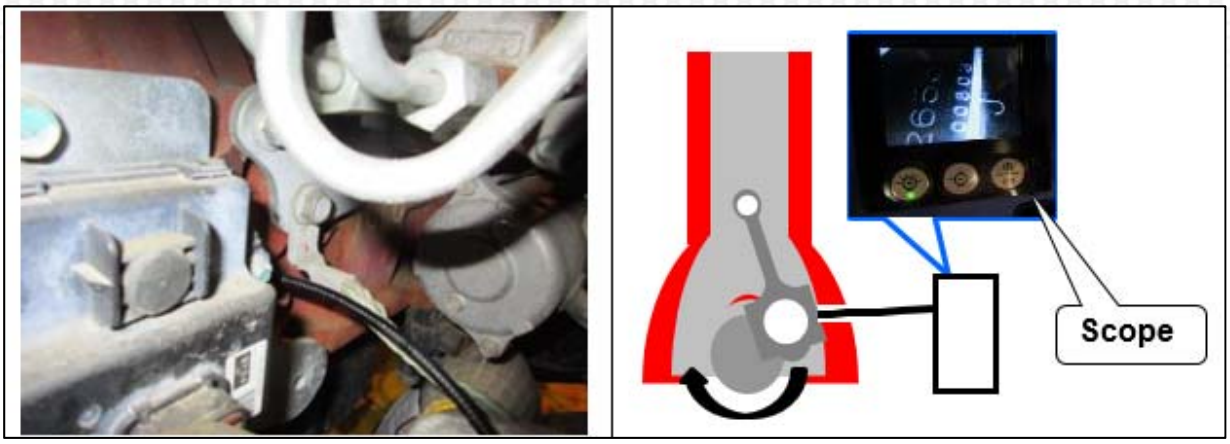
2. Insert a bore scope camera approximately 3/8” into the hole from which the plug was removed. Have an assistant rotate the engine by hand until the serial number on the connecting rod can be read with the camera.

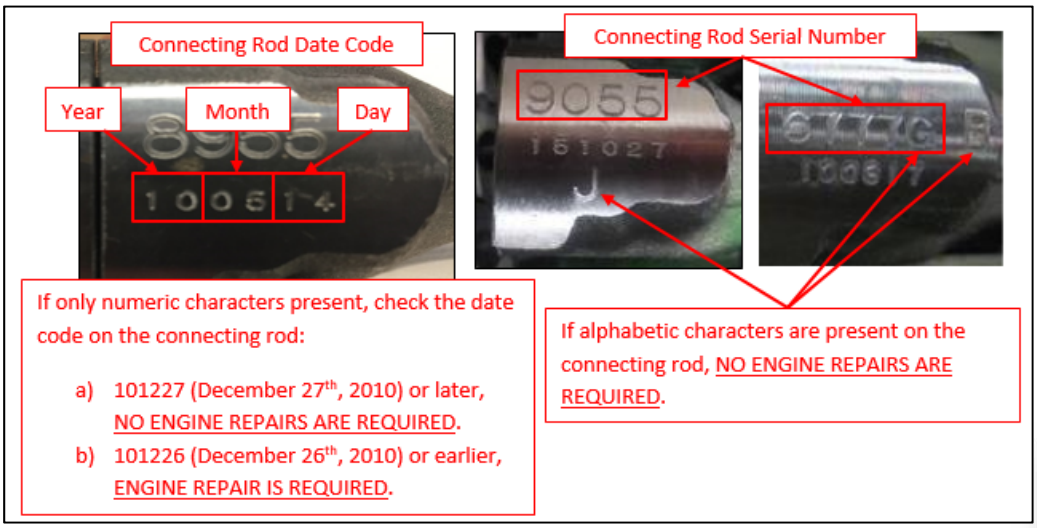
NOTICE: Use caution not to insert the bore scope too far into the hole when rotating the engine. Damage to the bore scope and engine may occur if the scope is inserted too far into the hole during engine rotation.



3. Record the serial number that appears on the connecting rod cap.

- If only numeric characters are present, check the date code. If the date code is 101227 or later, engine repair is not required. If the date code is 101226 or earlier, engine repair is required. (See photo below at left).

- If any alphabetical characters are present in the serial number, engine repair is not required. (See photos below at right).



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4. Reinstall the plug using a new soft washer (SZ43014003). Tighten the plug to the specified torque.
If engine repair is required as indicated by step 3, above, proceed to the repair procedure section, below.
If engine repair is not required, proceed to the final inspection procedure, below.

Specified Torque: 22 lb-ft (29 Nm)

CONNECTING ROD REPLACEMENT OVERVIEW:

This procedure will provide repair direction for removal and replacement of the 6 connecting rods. This procedure is not intended to overhaul the complete engine. If the engine was operating normally prior to inspection, **DO NOT** remove the main bearing caps and cylinder liners for this procedure.

If needed, section EN02 (Engine Mechanical J08E) in the Hino J08 Engine Workshop Manual can also be referenced for procedures and specifications.

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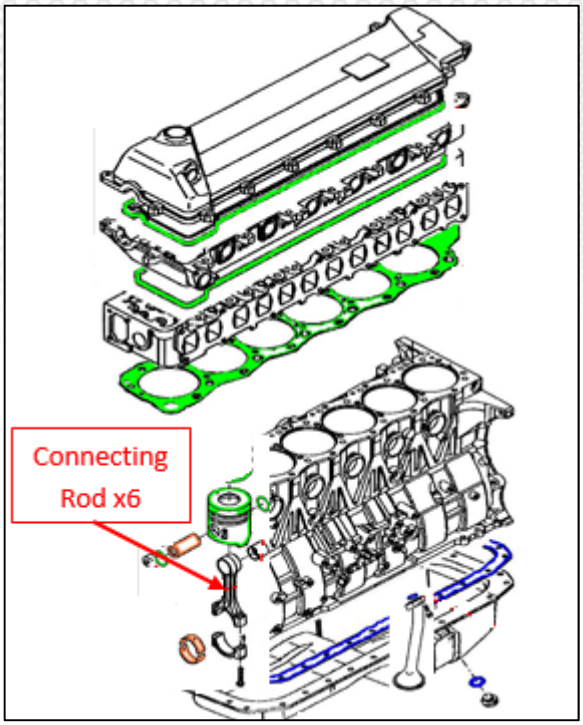
NOTICE: If metal debris is found in the oil pan, the oil cooler must be replaced.



PARTS

PART NUMBER	PART NAME	QUANTITY
04007090E0	Connecting Rod Kit 1	1
04007096E0	Connecting Rod Kit 2	1
HN001234092	Connecting Rod Kit 3	1
15613E0110	Hino Oil Filter	1

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KIT CONTENTS (2 Kits Noted Above):

CONNECTING ROD KIT 1: 04007-090E0		
PART NUMBER	**PART NAME**	**QUANTITY**
SZ43018009	WASHER, SOFT	1
SL72201210	WASHER, SOFT	2
SL72201415	WASHER, SOFT	2
S241351121	GASKET,OIL,OUTLET	2
S171041990	GASKET, SUB ASSY, EXH	2
SZ30129010	RING,O	1
SZ30159006	RING,O	1
25634E0020	GASKET, EGR PIPE	1
SZ20916014	WASHER, SOFT	4
SZ43008013	WASHER, SOFT	2
SZ43010011	WASHER, SOFT	2
SZ10910057	BOLT, FLANGE	7
11115E0200	GASKET, CYLINDER HEAD	1
S112131880	GASKET, CYL HEAD COVER	1
12151E0071	GASKET, OIL PAN	1
13041E0700	BEARING SET,CONNECTING	1
SZ20908024	WASHER	7
13260E0100	ROD ASSY, CONNECTING	6
11118E0011	GASKET, CAMSHAFT HOUSING	1
SZ52037001	RING, RETAINER	12

CONNECTING ROD KIT 2: 04007-096E0		
PART NUMBER	**PART NAME**	**QUANTITY**
SZ43014003	WASHER, SOFT	18
SZ12610015	STUD	2
S1793E0020	STUD	2
SZ17810007	NUT	4
S241091830	GASKET, SUB ASSY	1
SZ91015133	GASKET	1
23701E0140	PIPE SUB-ASSY, INJECTION NO1	1
23702E0180	PIPE SUB-ASSY, INJECTION NO2	1
23703E0140	PIPE SUB-ASSY, INJECTION NO3	1
23704E0180	PIPE SUB-ASSY, INJECTION NO4	1
23705E0100	PIPE SUB-ASSY, INJECTION NO5	1
23706E0130	PIPE SUB-ASSY, INJECTION NO6	1
23811E0600	PIPE, FUEL, NO.1	1
SL72201010	WASHER, SOFT	2
SZ92033C61	HOSE, AIR	1
SZ46060008	CLAMP, HOSE	2
SZ46010002	CLAMP, HOSE	2

CONNECTING ROD KIT 3: HN001234092		
PART NUMBER	**PART NAME**	**QUANTITY**
S171041580	GASKET,SUB ASSY,EXH	1
SZ11610107	STUD	8
SZ17810007	NUT	4
S241091820	GASKET,SUB ASSY	1
SZ17810012	NUT,FLANGE	4
S230812640	PIPE SUB ASSY,NOZZLE	1
21811E0060	BOLT, UNION NIPPLE	1
SZ43010011	WASHER,SOFT	2
25634E0010	GASKET, EGR PIPE	2
25627E0070	GASKET, EGR VALVE	2
SZ46011006	CLAMP, HOSE	1

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REPAIR PROCEDURE:

NOTICE: DO NOT perform this repair procedure unless the connecting rod serial number contains only numeric characters, as identified in the Inspection Procedure, above. This repair procedure **MUST** be performed if the connecting rod serial number contains only numeric characters. Refer to Item 3 of the Inspection Procedure, described and shown above.

NOTICE: This is a complex engine repair that should be performed by a Certified Hino Technician who has completed the “Engine Overhaul” class at the Hino training center.

NOTICE: This procedure is intended to address potential premature failure of the connecting rod wrist pin bushings. It **IS NOT** intended to address any non-related or pre-existing worn or failed engine parts such as, but not limited to, main bearings, crankshaft, pistons, cylinder liners, injectors or injector cups, cylinder head components etc.

Should ANY additional Parts or Labor be required over and above the contents of this procedure, a TechAssist case MUST be created for preapproval of the additional requested Parts and/or Labor.

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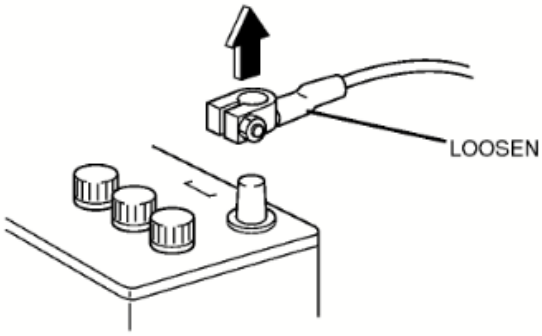
NOTICE: You need to be aware that while performing this complex procedure, many parts have to be removed and are later to be reinstalled at the proper time and in the proper sequence. Other parts that are to be removed are to be discarded and replaced with new parts. As you complete each step of the disassembly and assembly procedure, make certain that you are removing, retaining, and reinstalling current parts, and removing and discarding other parts, which are to be replaced, as required.

TORQUE REFERENCE CHART

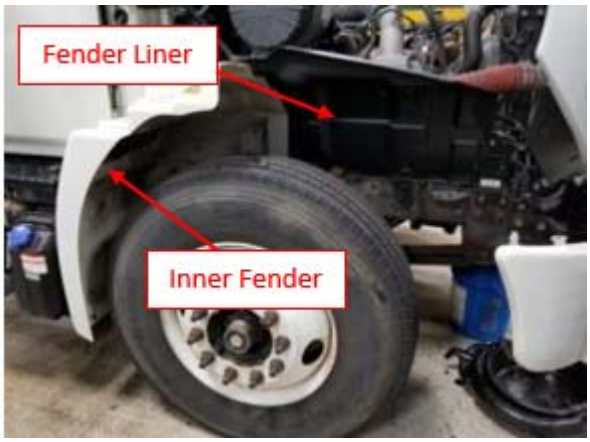
Group	Location		Torque Lb-ft	Torque N·m	Diameter x pitch	Comment
Cylinder head	Valve Cover		21	28.5	M8 × 1.25	
	Cam housing		17	23	M8 × 1.25	
	Cam bearing cap		23	31	M8 × 1.25	
	Cross head adjust screw nut		18.5	25	M8 × 1	
	Rocker arm adjust screw nut		18.5	25	M8 × 1	
	Rocker arm shaft bolt		33	45	M10 × 1.5	Apply oil to bolt
Lubricating system	Oil strainer		21	28.5	M8 × 1.25	
	Oil pan		22	30	M8 × 1.25	Tighten Twice
	Oil pan drain plug		30	41	M18 × 1.5	
Intake system	Intake pipe		21	28.5	M8 × 1.25	
	EGR pipe (EGR cooler - EXH manifold)		50	68.5	M10 × 1.5	
	EGR pipe (EGR cooler - EGR valve)		42	57	M10 × 1.5	
	Inter cooler hose clamp		4.5	6		
Exhaust system	Stud bolt		35	47	M10 × 1.5	
	Turbo to Manifold		55	75	M10 × 1.5	
Cooling system	EGR cooler		27	37	M8 × 1.25	
	Coolant Elbow/Lift Hook (Below EGR cooler - head)		92	125	M12 × 1.75	
	Thermostat case (to head)		21	28.5	M8 × 1.25	Loosely tighten, then apply final torque
	Thermostat case (to water pump)		26.5	36	M8 × 1.25	
Fuel system	Common rail		21	28.5	M8 × 1.25	
	Injection pipe nipple		32.5	44	M14 × 1.5	
	Fuel pipe nipple (supply pump to common rail)	Pump side	32.5	44	M14 × 1.5	
		Common rail side	40	54	M16 × 1.5	
	Fuel filter (Bubbler)		40.5	55	M10 × 1.5	
	Fuel filter, air bleeder plug		5	6.9	M8 × 1.25	
Special Process						
	Connecting Rod Bolt	Apply oil to bolts. 51 lb-ft (69 Nm) plus 90 degrees each bolt, then 45 degrees, each bolt				
	Cylinder Head Bolt	Apply oil to bolts. Apply 43.5 lb-ft (59 Nm) in the specified order. For M12 bolts only, additional 90 degrees in the specified order, plus an additional 90 degrees in the specified order.				

DISASSEMBLY:

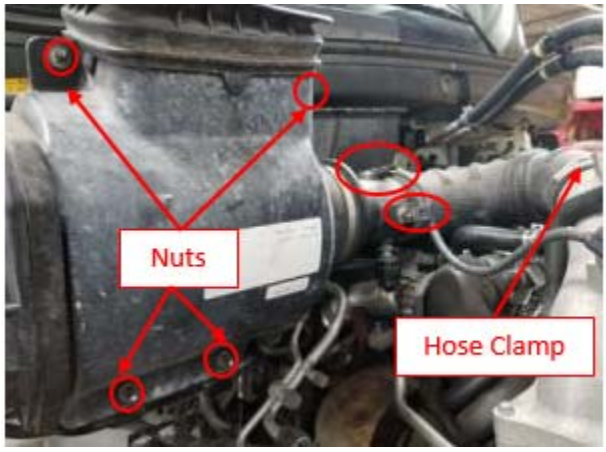
1. Disconnect the negative battery terminal.



2. Open the hood and remove the 6 bolts and 1 nuts securing the passenger side inner fender. Remove the 4 bolts and 1 nut securing the fender liner. Retain for reinstallation.



3. Loosen the hose clamp on the air intake hose connected to the intake elbow and remove the hose. Disconnect the mass airflow sensor connector and harness clip. Remove the 4 nuts and washers securing the air cleaner box to the bracket. (See photo below) Remove the air filter assembly and retain all parts for reinstallation.



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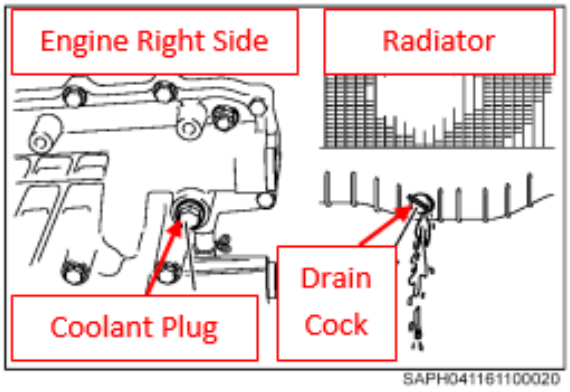
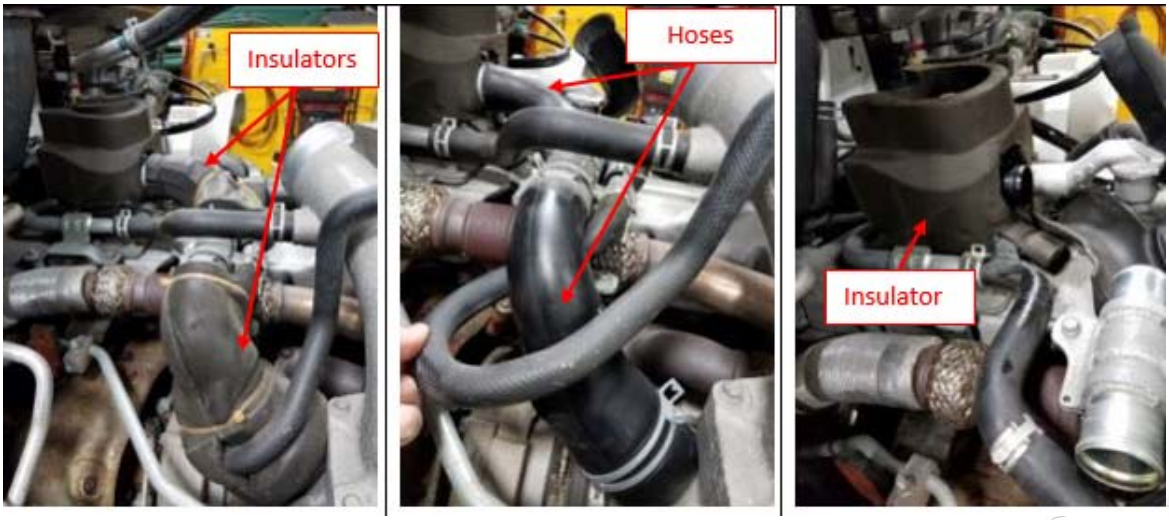
4. After the engine has cooled off, drain the engine oil from the oil pan. Drain the engine coolant into a clean container- the coolant will be reused. The coolant can be drained from the plug on the side of the oil cooler housing, and from the drain cock on the radiator. Reinstall the coolant plug and drain cock once the coolant has finished draining.

WARNING: NEVER open the radiator cap or drain plugs until the engine has cooled off completely. Failure to allow the engine to cool off may result in serious coolant burn injuries.



5. This engine shown below is equipped with the optional cold weather package. If applicable, remove and discard the tie straps securing the insulators on the breather hoses. Remove the breather hoses. Retain insulators for reinstallation.



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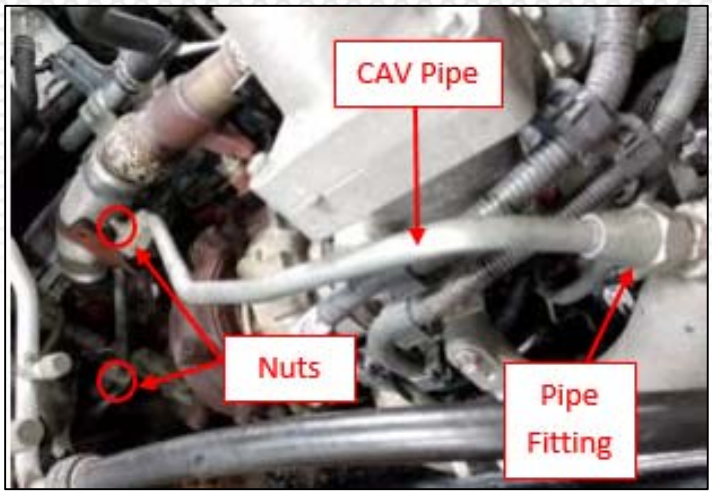
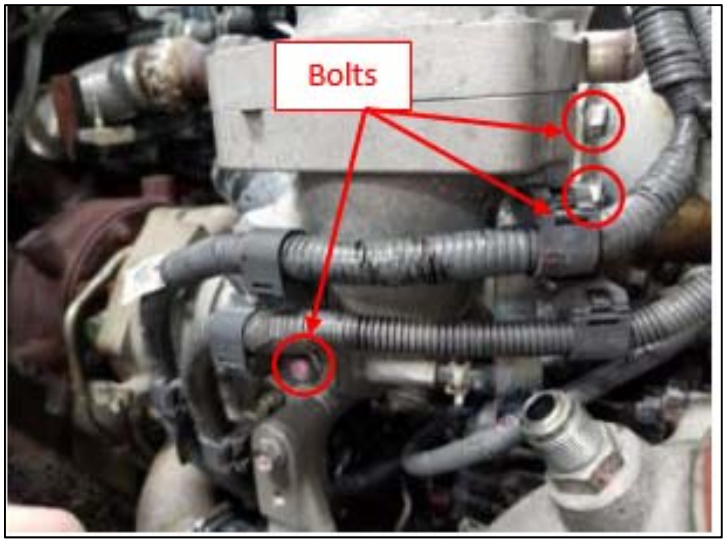
6. Remove the 2 nuts/clamps and pipe fitting on the CAV air pipe and retain for installation. Position the CAV pipe to the side, out of the way.



7. Remove the 3 bolts securing the wire harnesses to the intake pipe and retain for installation.



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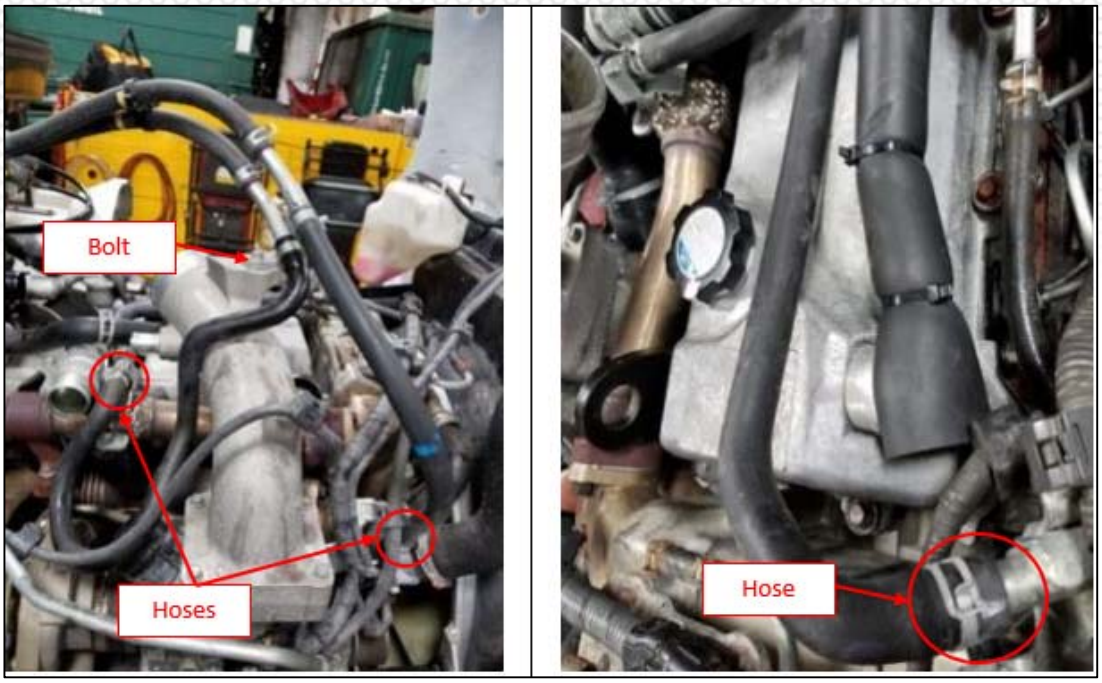
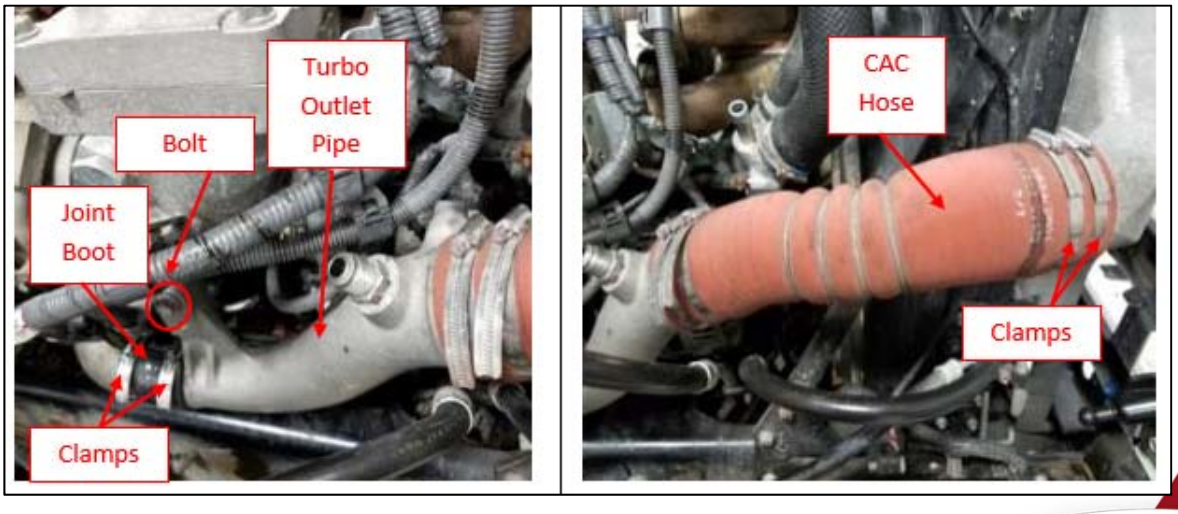
8. Disconnect the 3 heater hose connections. Disconnect the bolt securing the heater hose bracket to the upper intake pipe and retain for reinstallation.



9. Remove the bolt securing the turbo outlet pipe and retain for installation. Remove the turbo outlet pipe clamps and joint boot and discard. Disconnect the CAC hose clamps at the CAC. Retain the outlet pipe, CAC hose, and clamps for reinstallation.



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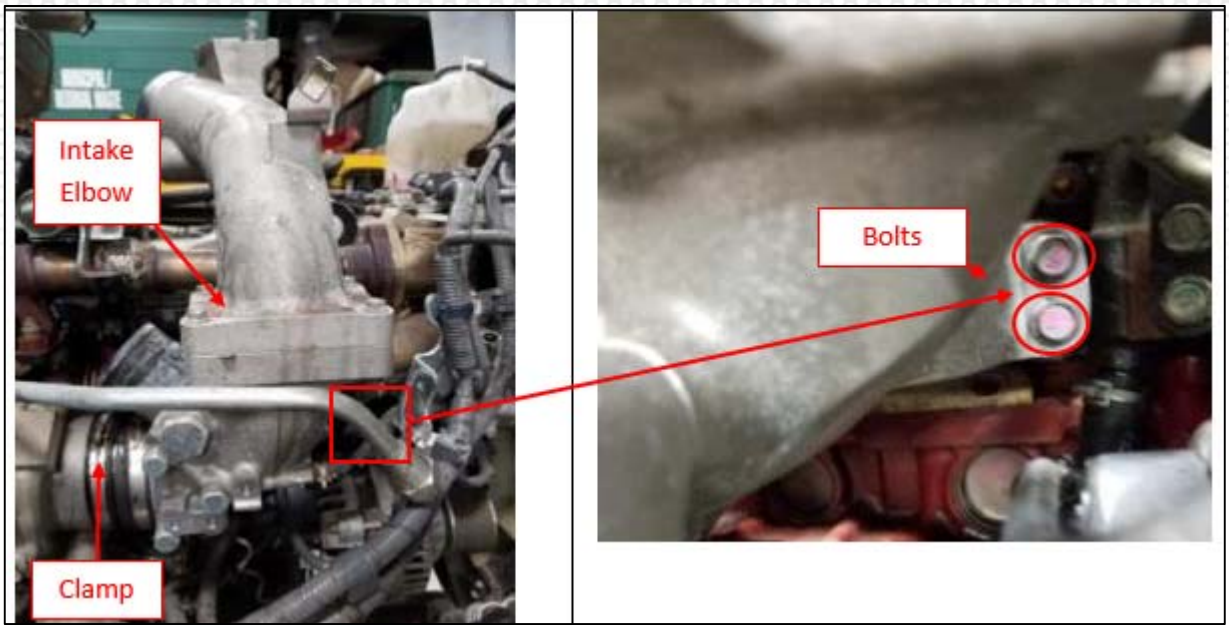
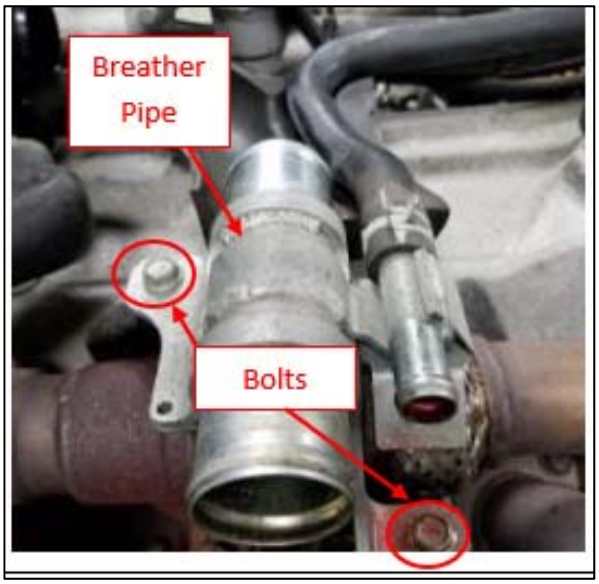
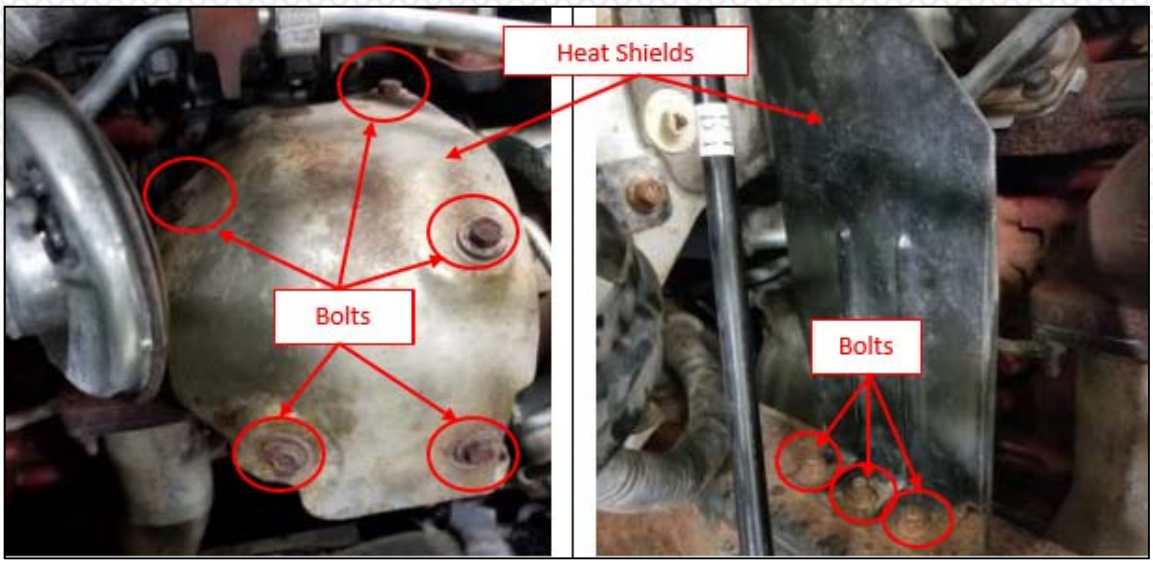
10. Remove the 2 bolts securing the intake elbow. Remove the hose clamp securing the intake elbow to the turbo and remove the intake elbow. Retain all parts for reinstallation.



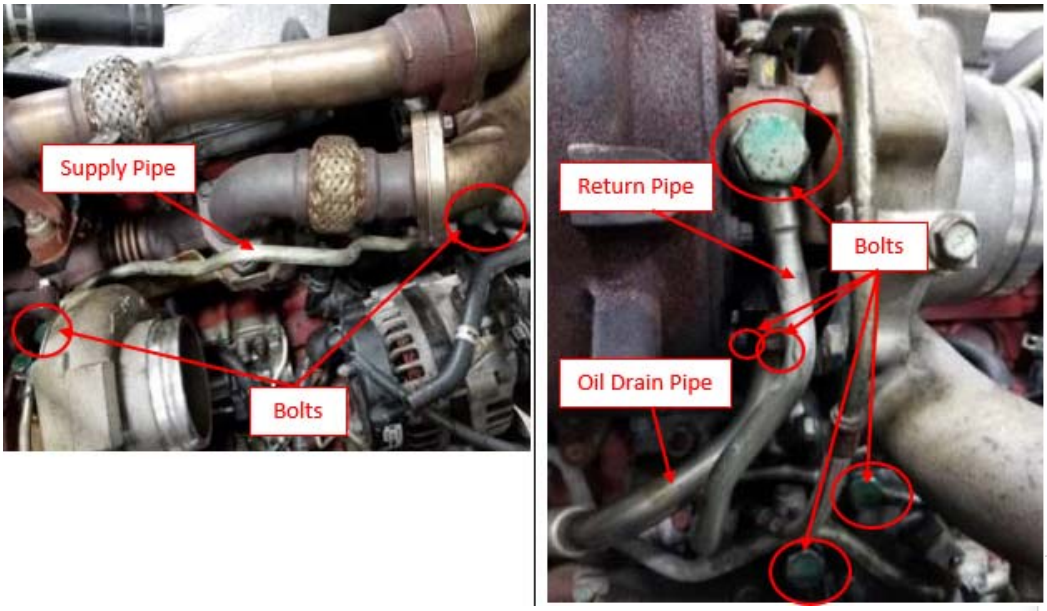
11. Remove the 2 bolts securing the breather pipe tube and retain for reinstallation.



12. Remove the 8 bolts securing the 2 turbo heat shields and retain for reinstallation. Remove the 3 nuts on the frame mounted heat shield and retain for reinstallation.



13. Remove the 2 banjo bolts on the turbo coolant supply pipe. Remove the coolant return banjo bolt from the turbo. Remove the banjo bolt from the oil feed line and the coolant return line at the oil cooler. Retain all bolts for reinstallation. Discard all soft washers. Remove the 2 bolts securing the oil drain pipe and retain for reinstallation. Discard the drain pipe gasket.



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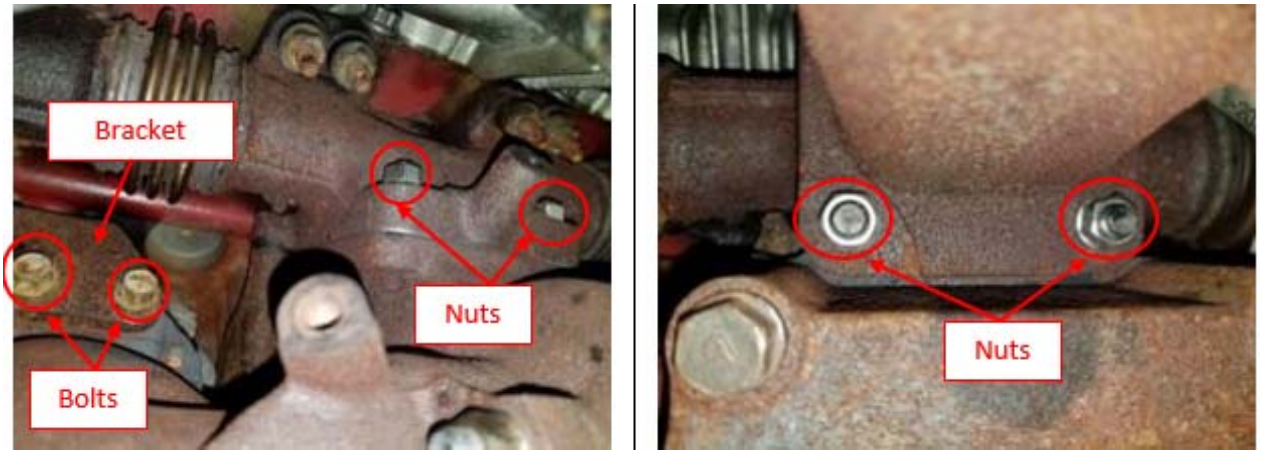
14. Remove the 2 bolts above the exhaust brake that secure the down pipe and retain for reinstallation. Use of a torch is recommended to heat the 4 down pipe nuts in order to avoid breaking the down pipe studs. Remove and discard the 4 nuts on the down pipe, and the down pipe gasket.

15. Remove the 2 turbo bracket bolts and retain for reinstallation. Remove and discard the 4 nuts securing the turbocharger to the exhaust manifold. Remove the turbocharger and retain for reinstallation. Discard the turbo gasket.



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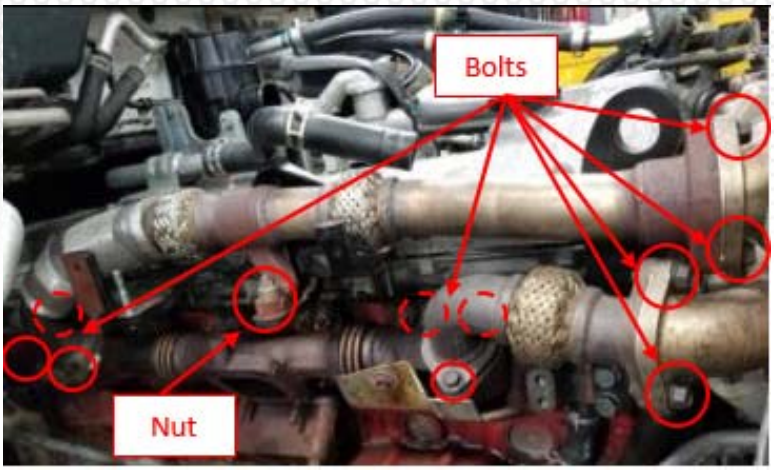
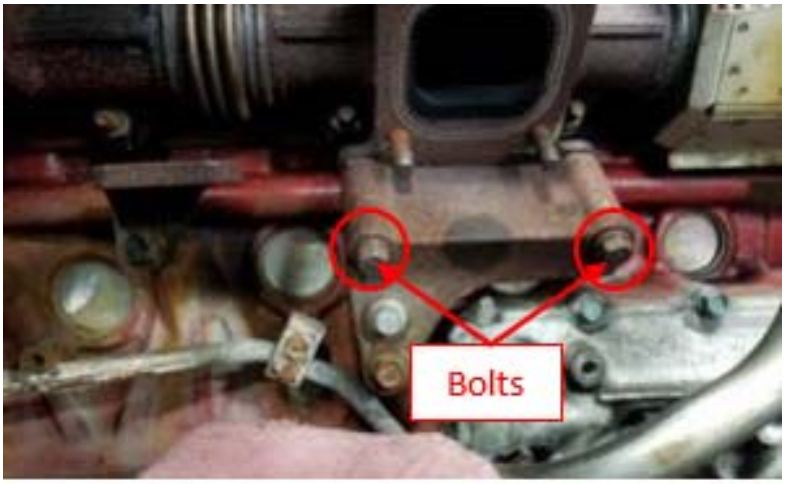
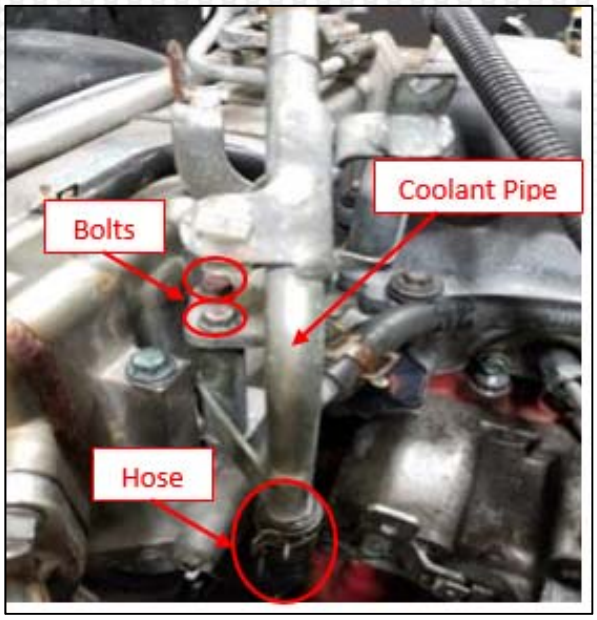
16. Remove the 10 bolts and 1 nut securing the EGR pipes and retain for reinstallation. Remove the EGR pipes. Discard the gaskets and retain all nuts and bolts for reinstallation.



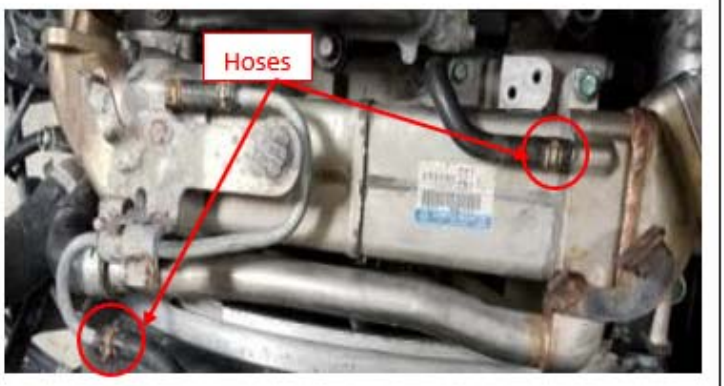
17. Remove the 2 bolts securing the exhaust manifold to the bracket and retain for reinstallation.

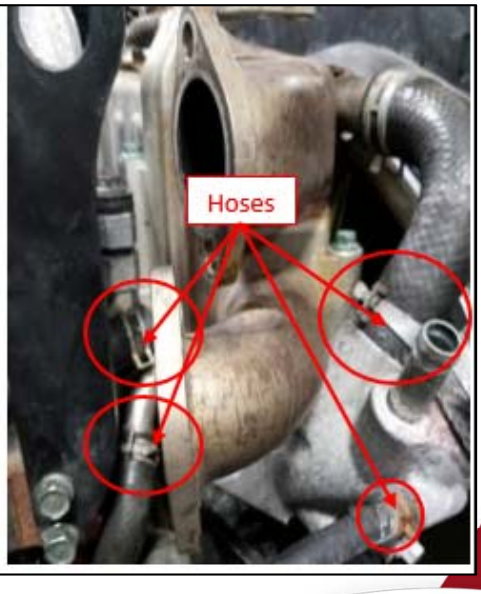


18. Disconnect the wiring harnesses clipped to the top of the EGR cooler and coolant pipe. Disconnect the coolant hose to the coolant pipe. Remove the 2 bolts securing the coolant pipe to the thermostat housing and remove the pipe. Retain the bolts and pipe for reinstallation.

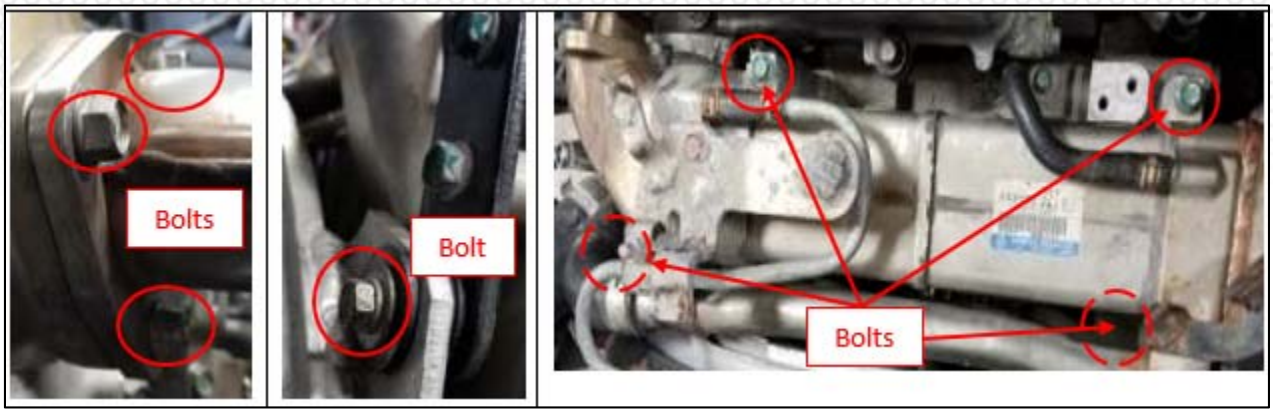


19. Disconnect the 6 coolant hoses attached to the EGR cooler.

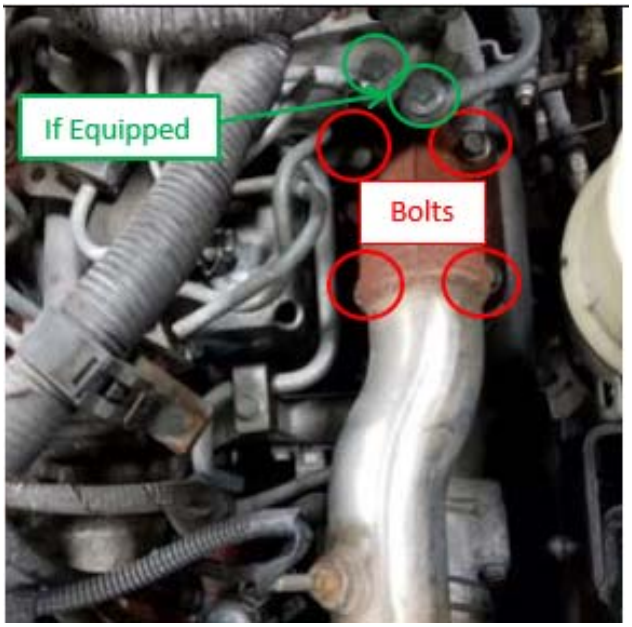




20. Remove the 3 bolts securing the left EGR pipe to the EGR cooler. Discard the EGR pipe gasket. Remove the bolt securing the EGR cooler to the fan shroud. Remove the 4 bolts securing the EGR cooler to the thermostat housing and remove the EGR cooler. Retain all bolts and EGR cooler for reinstallation.



21. Remove the 4 bolts attaching the EGR pipe to the EGR valve and retain for reinstallation. Discard the EGR gasket. The engine shown is equipped with the optional heated EGR pipe. If equipped, remove the 2 banjo bolts securing the coolant pipes to the EGR pipe and retain for reinstallation.



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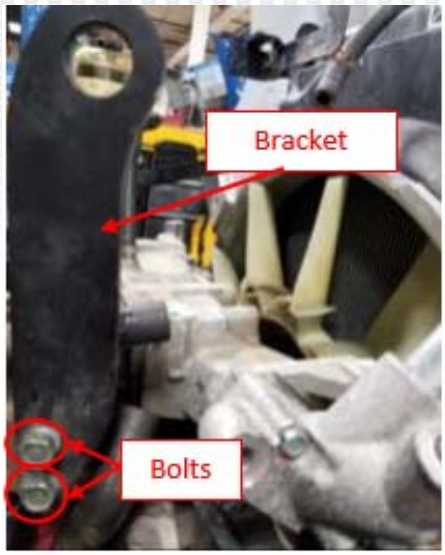
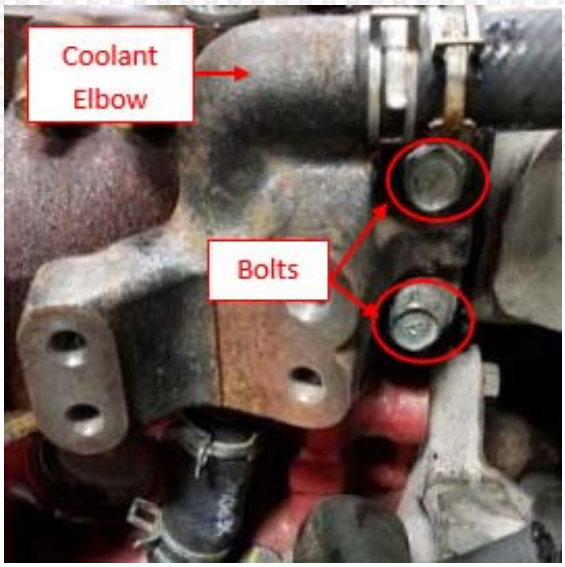
22. Remove the 2 bolts securing the lifting hook bracket. Remove the 2 bolts securing the coolant elbow to the cylinder head. The coolant elbow can be placed to the side without disconnecting the lower hose.





23. Loosen the 4 clamps securing the left CAC hose and disconnect the CAC hose. Retain for reinstallation.

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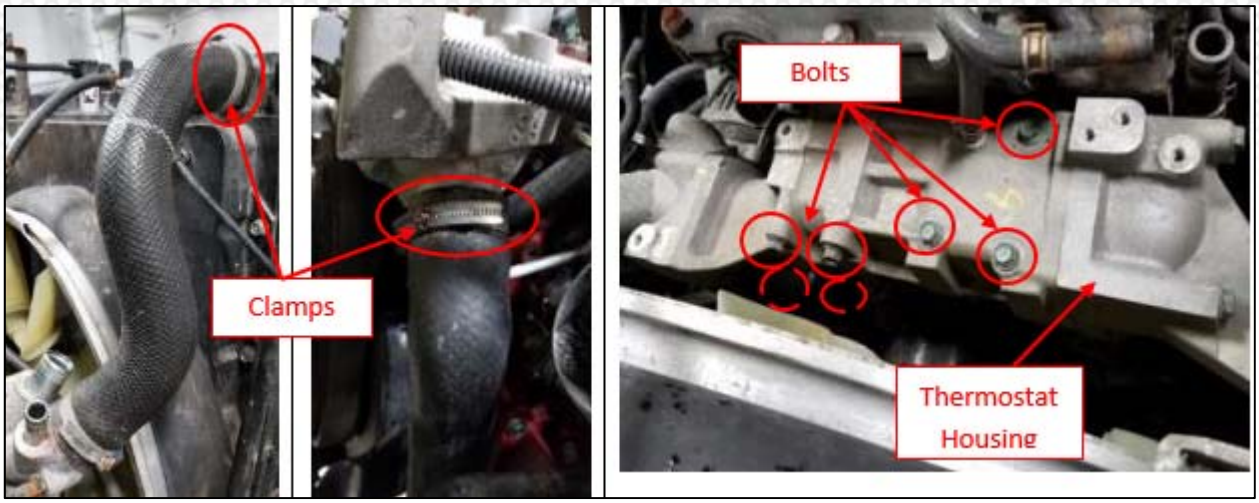
24. Disconnect the upper radiator hose at the radiator. Disconnect the lower radiator hose at the thermostat housing. Disconnect the coolant temp sensor. Remove the 7 bolts securing the thermostat housing to the engine. Remove the thermostat housing. Discard the water pump “O” ring and retain all other parts for reinstallation.



25. Disconnect the 9 wire harness clips, 2 intake temperature sensors, boost pressure sensor, fuel pressure sensor, fuel injector harness connector, and glow plug harness connector. Reposition the wiring harness out of the way.

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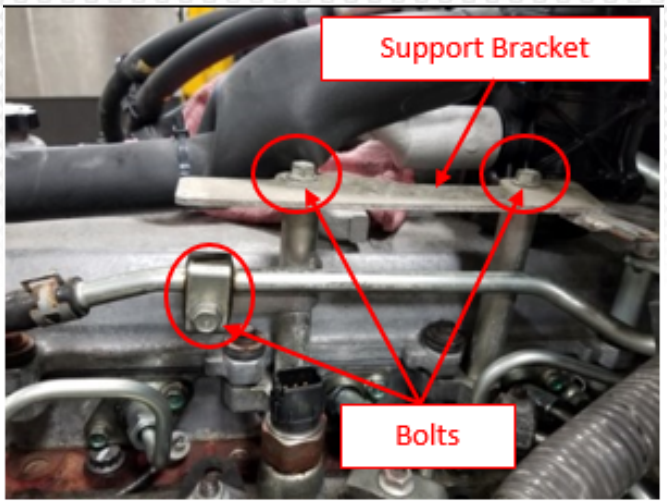
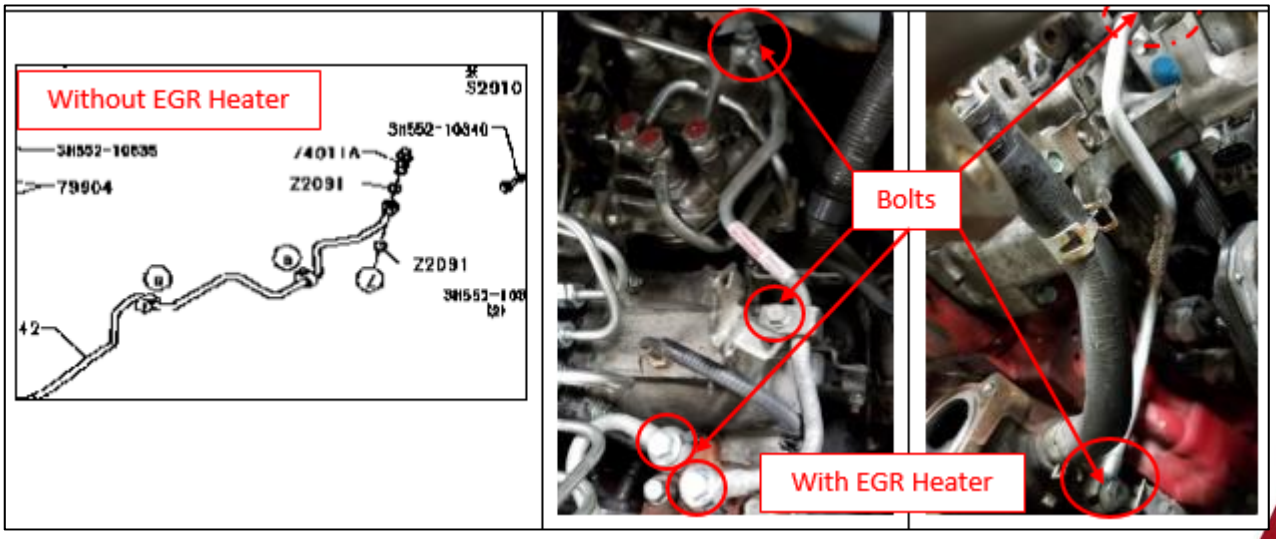
26. Remove the bolt/clamp securing the coolant pipe to the support bracket. Remove the 2 bolts securing the support bracket and remove the bracket. Retain all parts for reinstallation.



27. Remove the 2 nuts and 2 banjo bolts securing the air compressor coolant pipe and retain for reinstallation. If equipped with EGR heater, remove the 2 nuts and 2 banjo bolts securing the compressor coolant pipes and retain for reinstallation.



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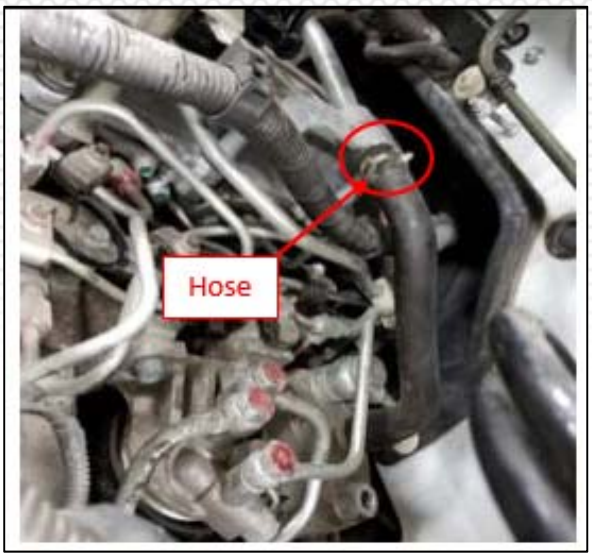
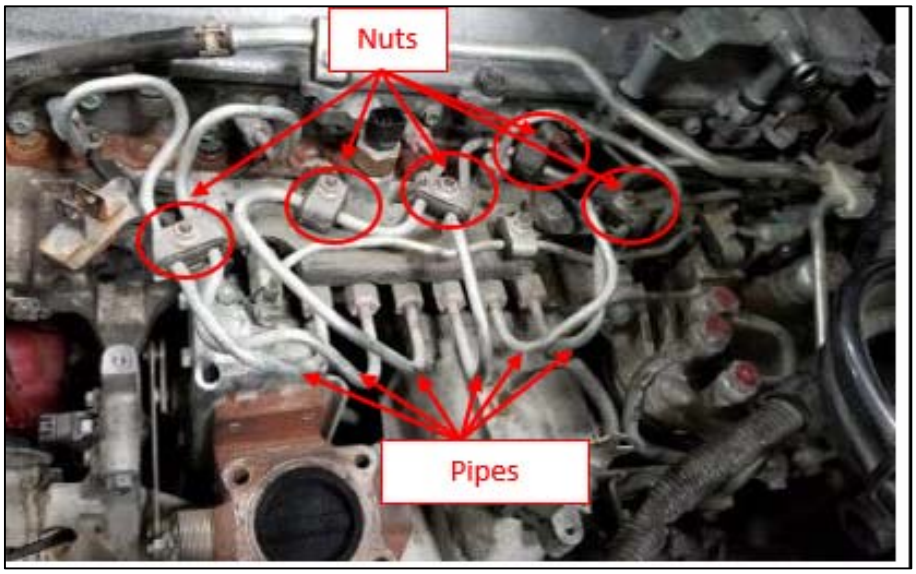
28. Disconnect the air compressor breather hose.



29. Remove the 5 nuts/clamps securing the 6 fuel injector pipes and retain for reinstallation. Disconnect the injector pipes at the fuel injector and common rail. Remove and discard the 6 injector pipes.



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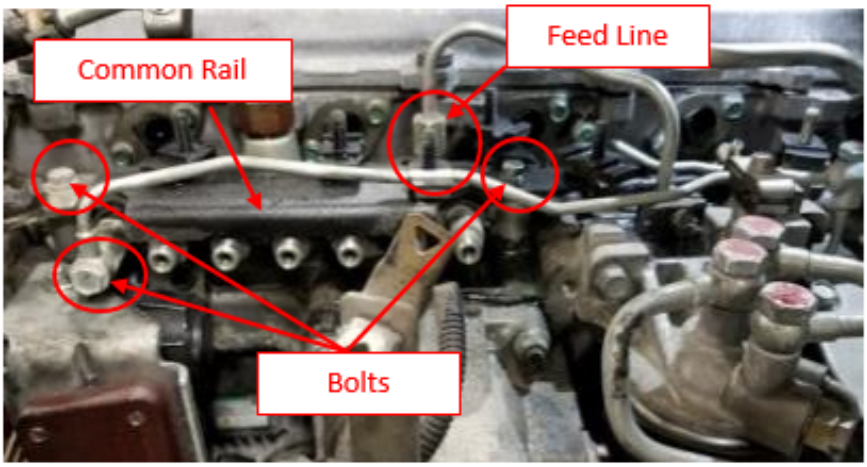
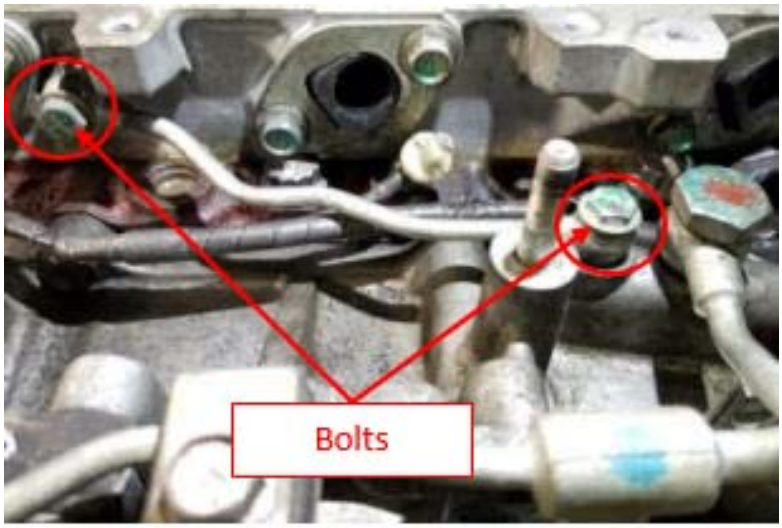
30. Remove pressure feed line to the common rail. Remove the banjo bolt from the return line and discard the soft washers. Remove the 2 bolts securing the common rail. Remove the common rail and retain all parts for reinstallation.



31. Remove the 2 banjo bolts from the return pipe between the cam housing and the intake manifold. Retain the pipe and bolts for reinstallation, discard the soft washers.



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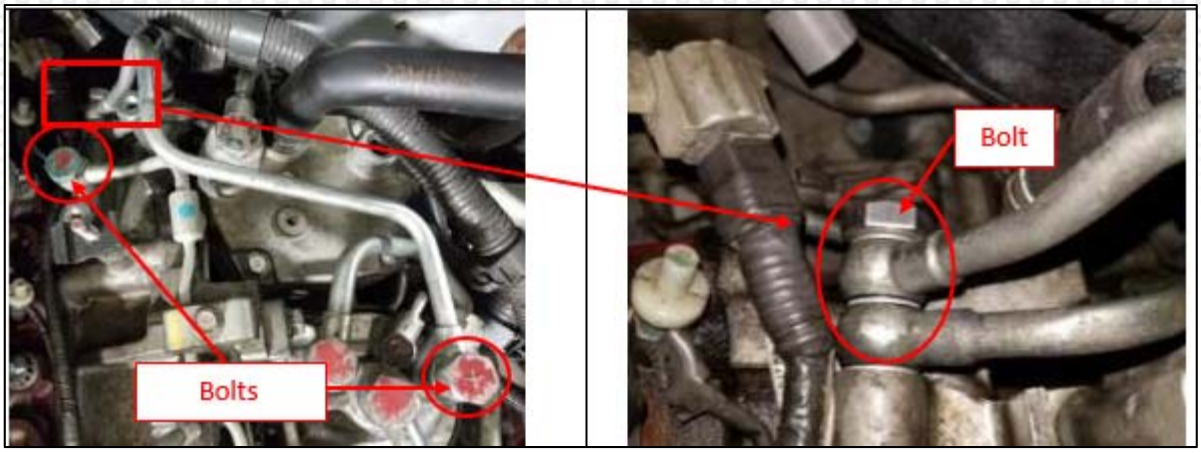
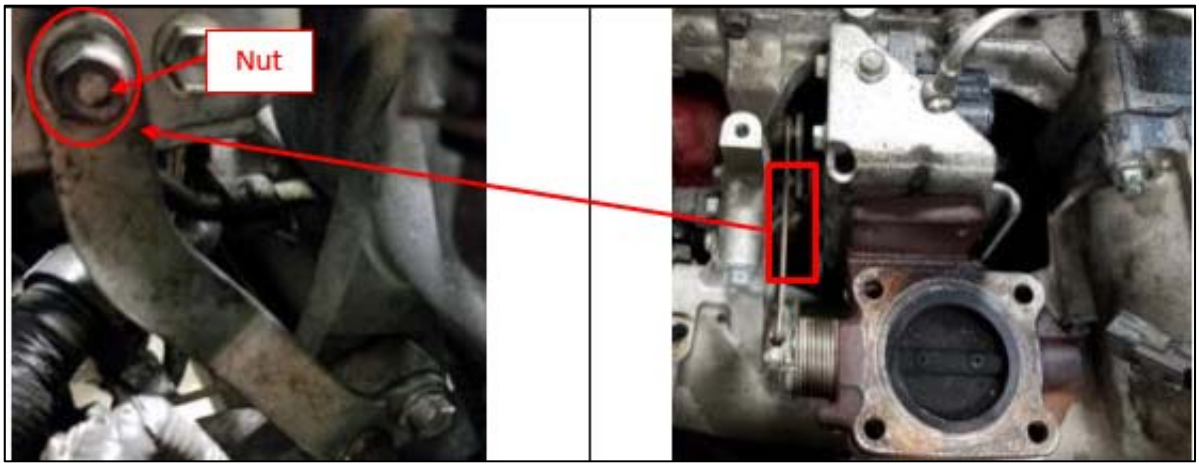
32. Remove the return line banjo bolt from the intake manifold. Remove the double banjo bolt on the back of the intake manifold. Remove the fuel pipe between the double pipe union and the fuel bubbler. Discard all soft washers and retain all bolts for reinstallation.



33. Remove the nut securing the bracket below the EGR valve. Disconnect the EGR valve electrical connector and remove the EGR valve. Discard the EGR valve gasket and retain all other parts for reinstallation.



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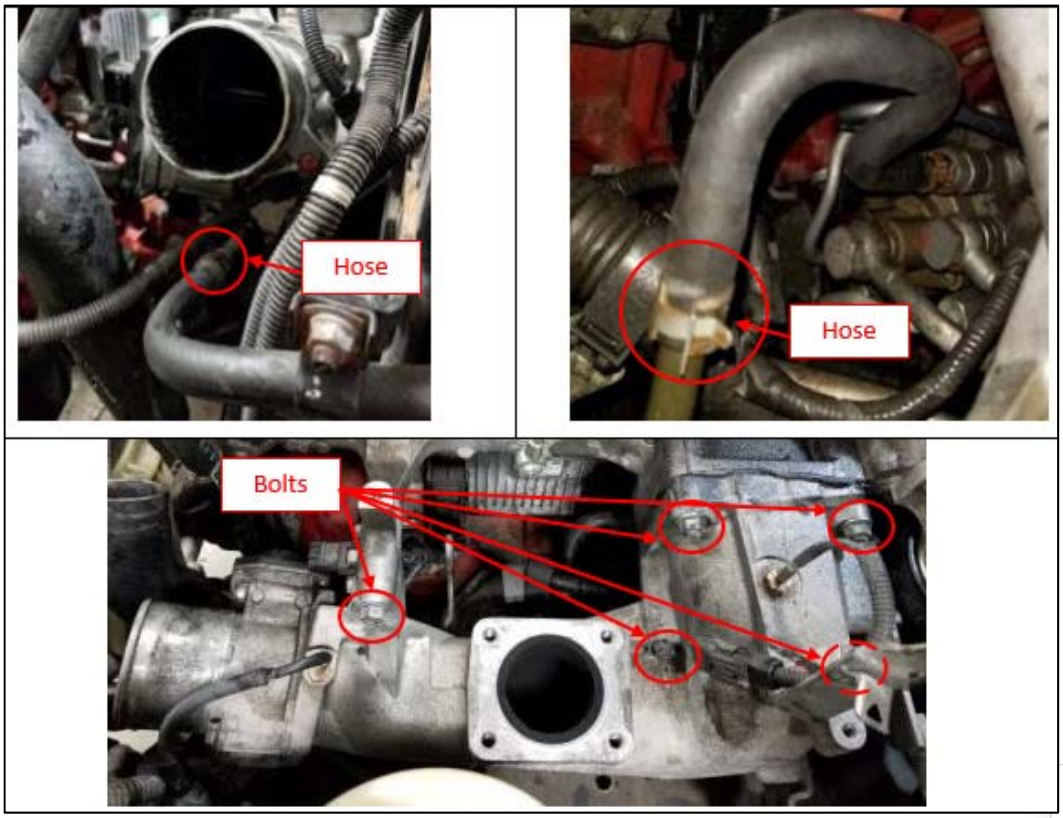
34. Remove the 2 bolts securing the fuel line bracket to the intake manifold. Remove the 2 bolts securing the dipstick bracket to the intake manifold. Retain all bolts for reinstallation.

35. Remove the 2 fuel supply hose connections below the intake elbow. Remove the 2 nuts and 3 bolts securing the intake elbow. Remove the intake elbow and retain all parts for reinstallation.



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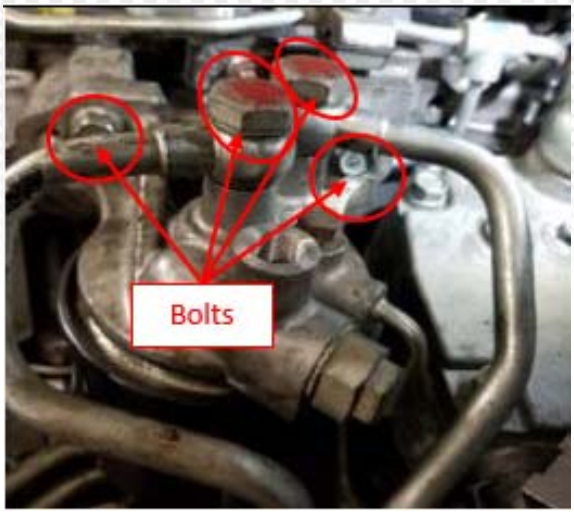
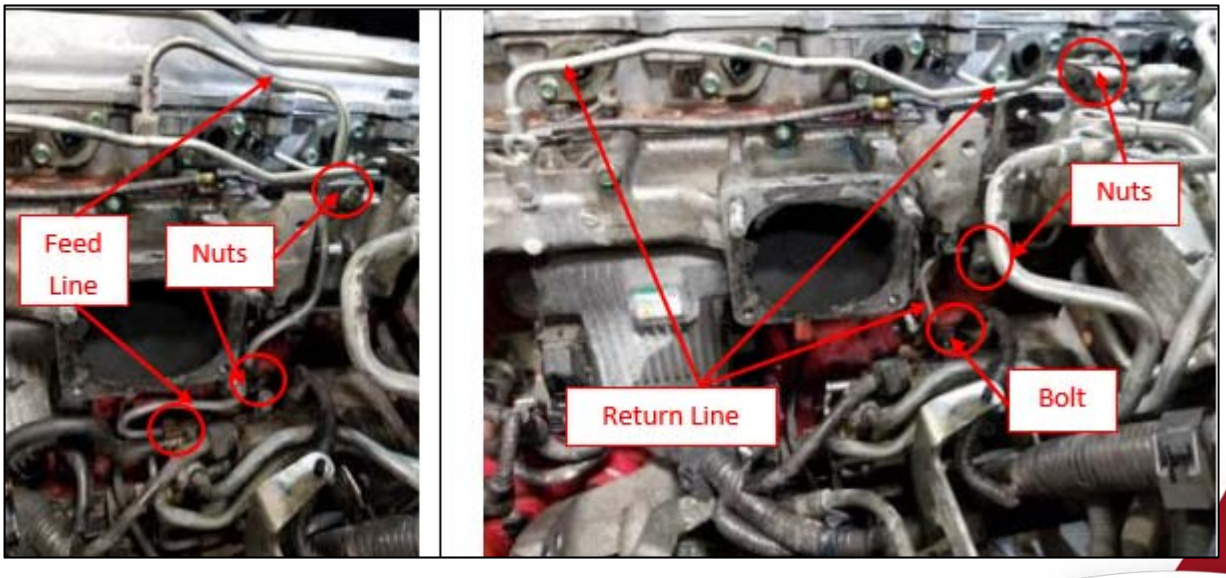
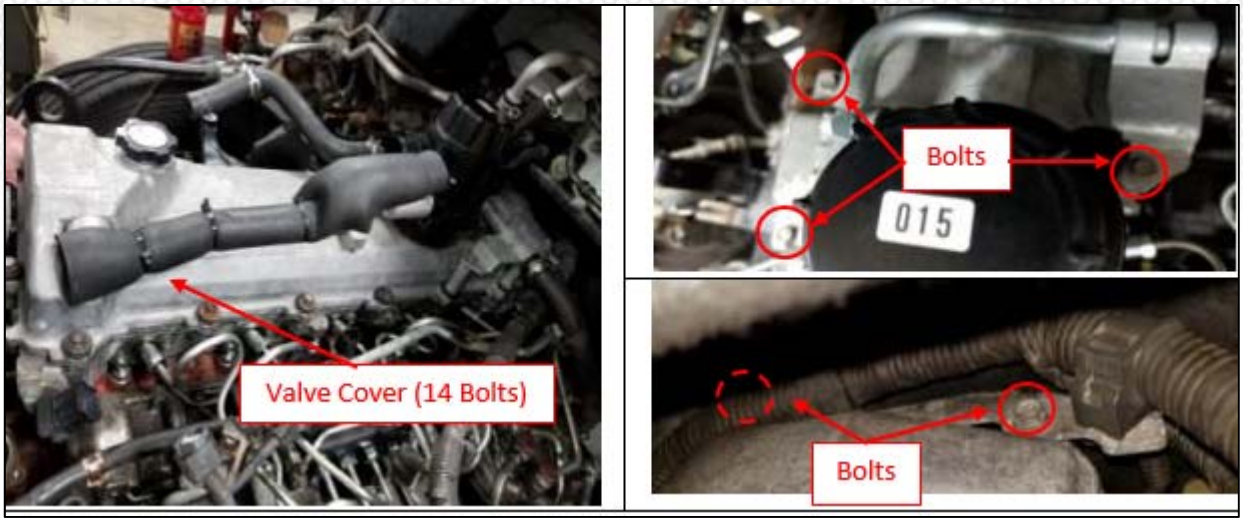
36. Remove the 2 banjo bolts on top of the bubbler. Remove the 2 bolts securing the bubbler to the intake manifold, and remove the bubbler. Retain the bubbler and all bolts for reinstallation. Discard all soft washers.



37. Remove the 2 nuts/clamps securing the fuel feed line and retain for reinstallation. Remove the fuel feed line from the fuel pump and discard it. Remove the 2 nuts/clamps securing the return line to the engine and retain for reinstallation. Remove the banjo bolt securing the return line to the fuel pump and retain for reinstallation. Discard the soft washers. Remove the return line and retain for reinstallation.



38. Remove the 14 valve cover bolts. Remove the coolant crossover bracket and the harness bracket at the rear of the valve cover. Remove the valve cover from the engine. Discard the valve cover gasket and retain all other parts for reinstallation.



39. Remove the 7 nuts securing the injector harness. Disconnect the 6 fuel injector connectors, and harness connector. Remove the injector harness and retain all parts for reinstallation.

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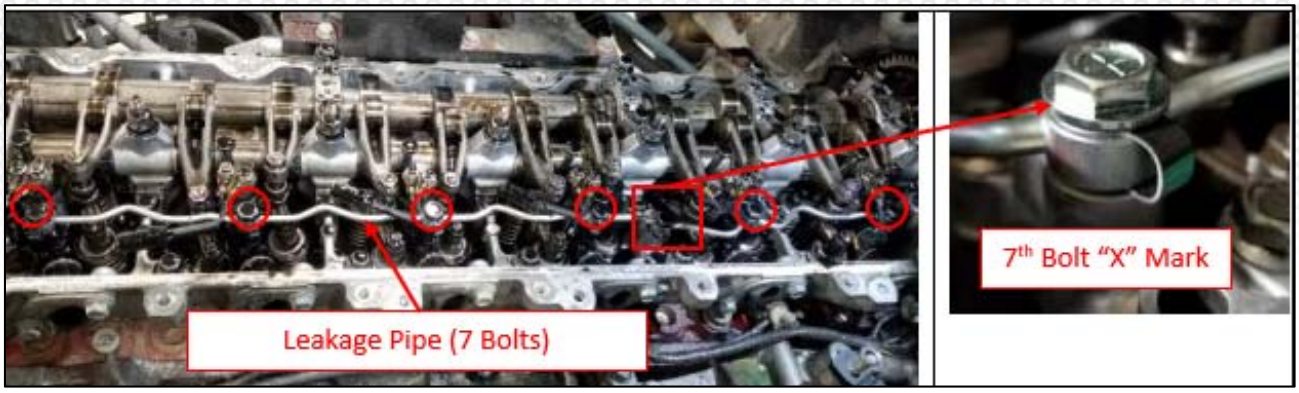
40. Remove the 6 bolts securing the leakage pipe to the fuel injectors and retain for reinstallation. Remove 7th bolt securing the leakage pipe to the cam housing. Discard the leakage pipe, 7th bolt, and all soft washers.



41. Remove the 12 bolts from the 6 injector grommets. Remove the injector grommets and retain all parts for reinstallation.

NOTICE: This procedure does not provide instruction to remove the fuel injectors from the cylinder head. Repairs related to the fuel injectors will be a dealer/customer responsible item.

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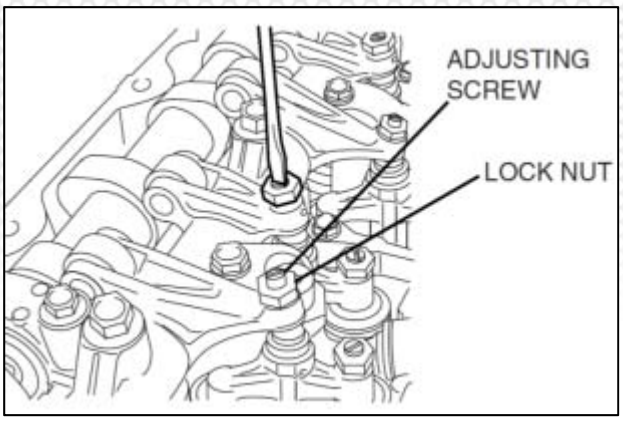
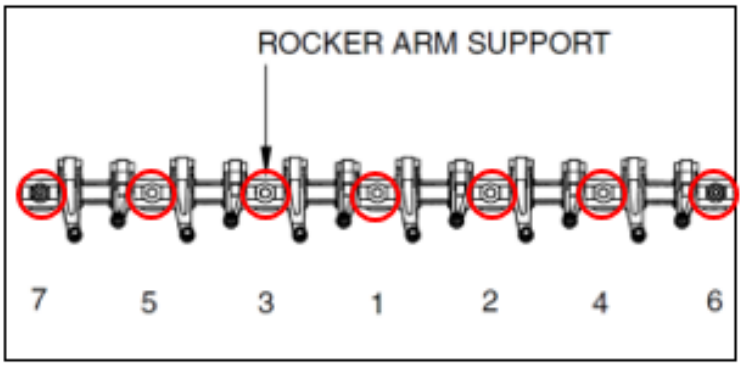
42. Loosen the lock nuts on the rocker arms and use a screwdriver to completely back off the adjusting screws on the rocker arms.



43. Loosen the 7 rocker arm shaft bolts **in the order shown** in the image below. **Use only hand tools to loosen the rocker shaft.** Remove the rocker shaft and retain for reinstallation. Discard the 7 bolts.

NOTICE: After the rocker shaft is removed, inspect the condition of the threads in the rocker shaft bolt holes in the cam housing. If the threads are damaged, cam housing replacement is required.



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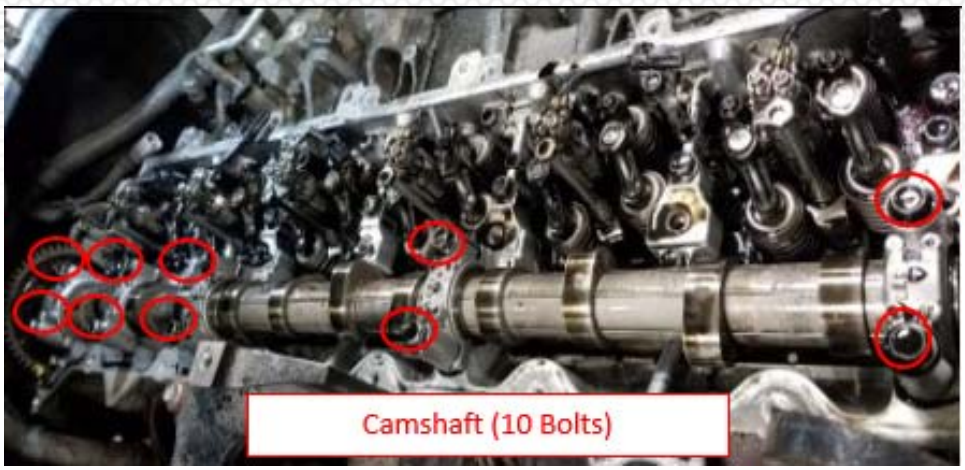
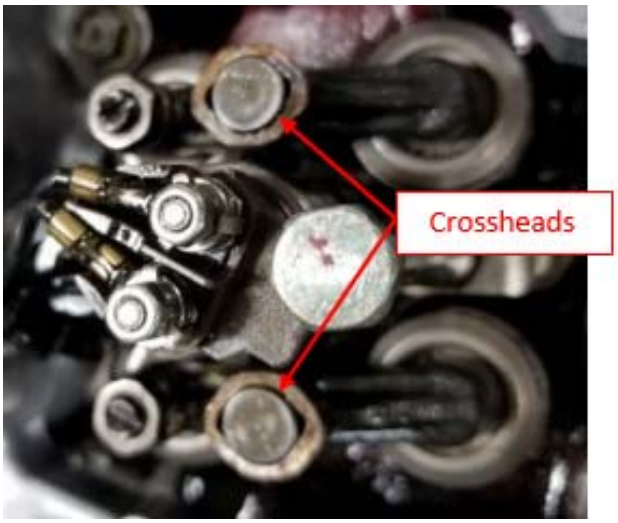
44. Remove the 10 bolts securing the 5 camshaft caps. Make certain to keep the camshaft caps in order, because they must be re-installed in the same position during installation. Remove the camshaft. Retain all parts for reinstallation.



45. Remove the 12 valve bridges (crossheads) from the cylinder head and retain for reinstallation. Keep the crossheads in order for reinstallation. (For example, the crosshead shown at the top center must be reinstalled in the same position.)



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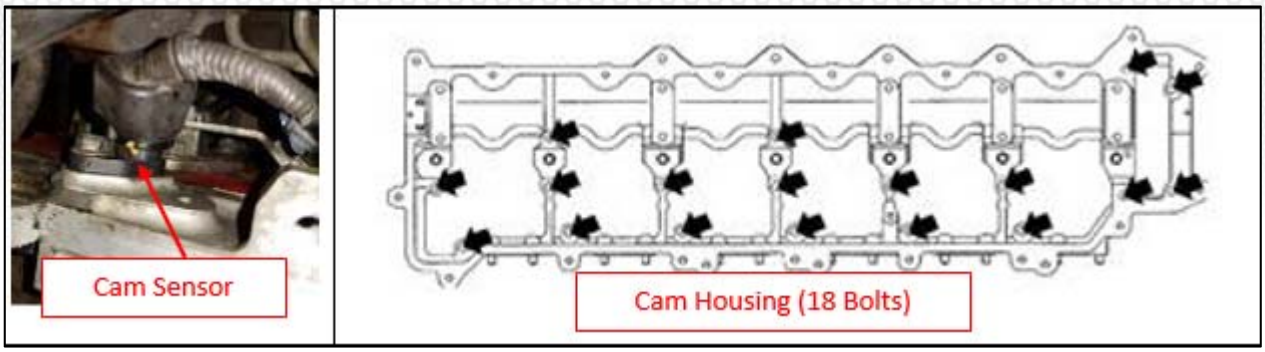
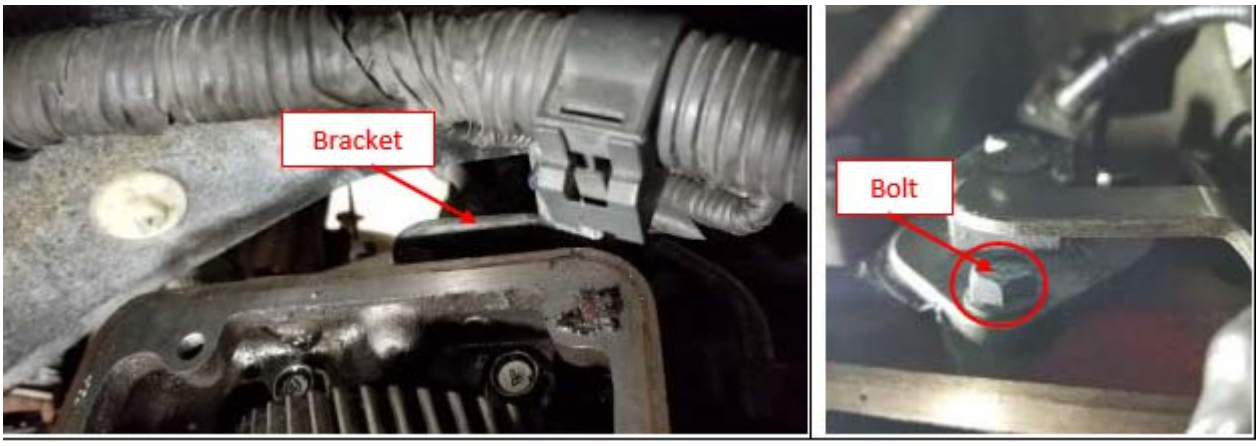
46. Unplug the camshaft position sensor at the back of the cylinder head. Remove the 18 bolts securing the cam housing to the cylinder head. Remove the cam housing. Discard the cam housing gasket. Retain all other parts for reinstallation.



47. Remove the 12mm head bolt securing the harness bracket to the back of the cylinder head and retain for reinstallation.



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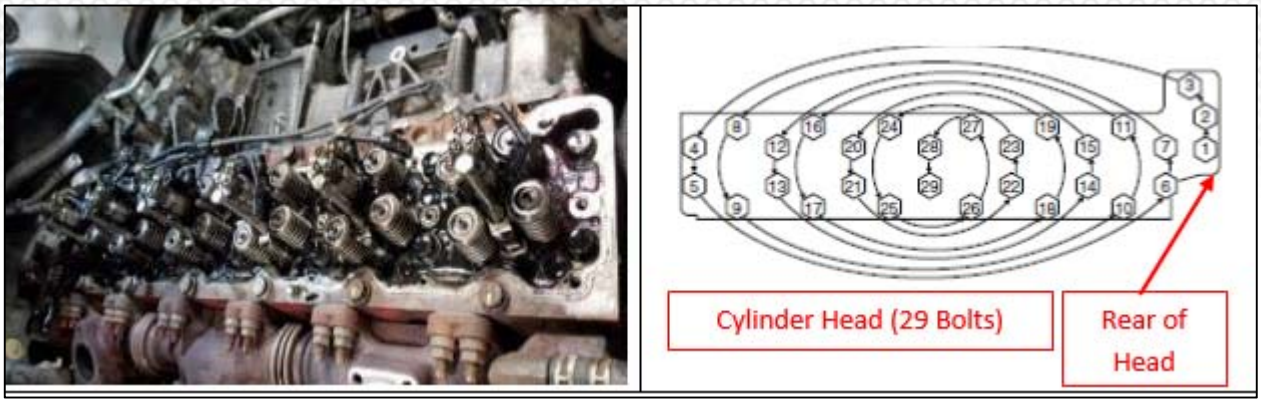
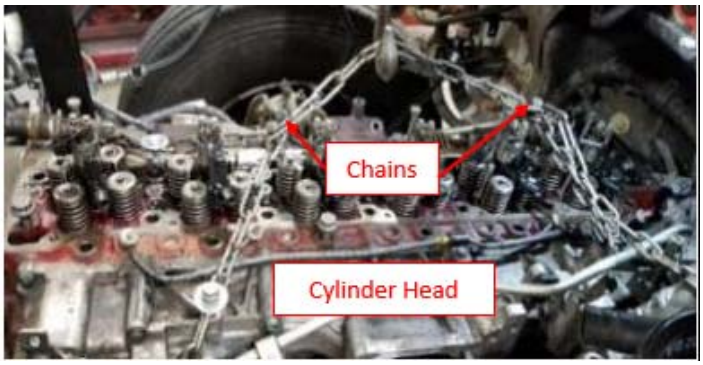
48. Remove the 29 cylinder head bolts and retain for reinstallation. The bolts will be measured for excess stretch during the assembly procedure. The bolts **MUST** be removed in sequence. Refer to the image below. The cylinder head will be removed with the intake and exhaust manifold attached. The glow plugs and fuel injectors do not require removal.



49. Install the SST (Special Service Tool) eye bolt (S0943-31070) lift hook brackets to the cylinder head. If SST S0943-31070 is not available, install chains or a load leveler in a manner that will not interfere with the fuel injectors or the valve springs to lift the cylinder head off of the engine.

WARNING: The cylinder head is extremely heavy. Make certain the chains and lifting hoist are capable of supporting the weight of the cylinder head when suspended. **NEVER** stand under, or place your extremities under the cylinder head while suspended. Serious bodily injury could occur in the event the cylinder head were to fall.



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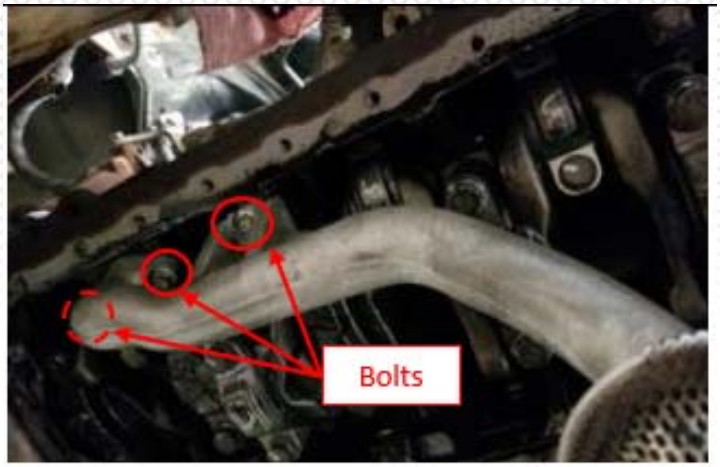
50. Use a crane or lifting device to lift the cylinder head off of the engine and set it on wooden blocks. Use caution not to contact or damage the tips of the fuel injectors or the glow plugs. Remove and discard the cylinder head gasket once the head is removed. Retain the cylinder head for reinstallation.

NOTICE: Damage will occur to the glow plugs and injector tips if the head is placed on a flat surface without supporting it with wooden blocks

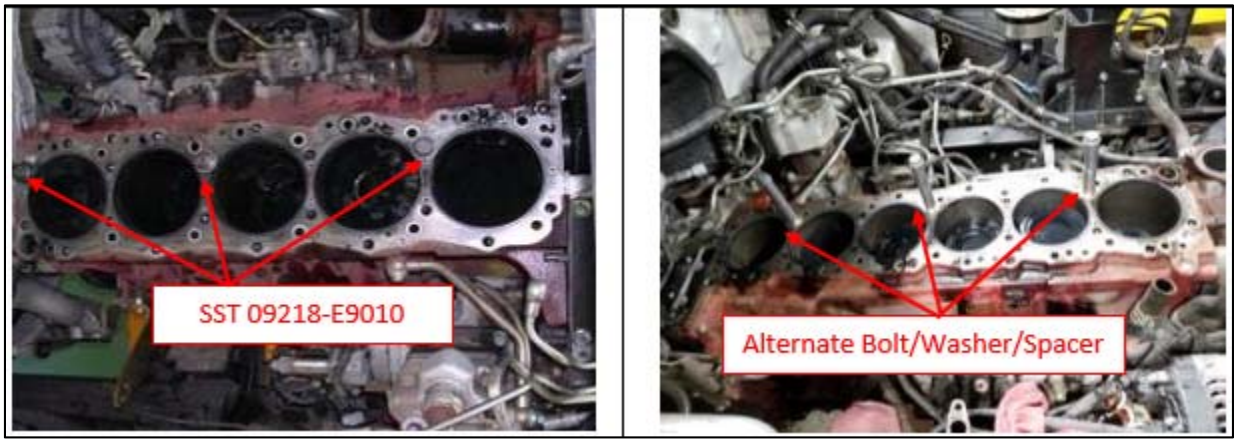
51. Remove the 34 bolts securing the oil pan and remove the oil pan. Discard the oil pan gasket and retain all other parts for reinstallation.

NOTICE: If metal shavings are found inside the oil pan, the oil cooler **MUST** be replaced.

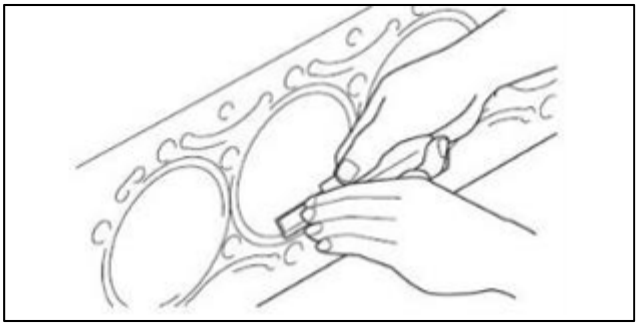
52. Remove the 3 bolts securing the oil pickup tube and remove the pickup tube. Discard the “O” ring, and retain all other parts for reinstallation.



53. Install SST 09218-E9010 cylinder liner stoppers into the engine block head bolt holes. If not available, use a suitable bolt and washer combination to hold the cylinder liners in place during piston removal.



54. Rotate the engine to lower each cylinder to BDC (Bottom Dead Center). Use a plastic scraper to remove the carbon ridge at the top of the cylinder bore. Do not scrape the cylinder bore below the carbon ridge.



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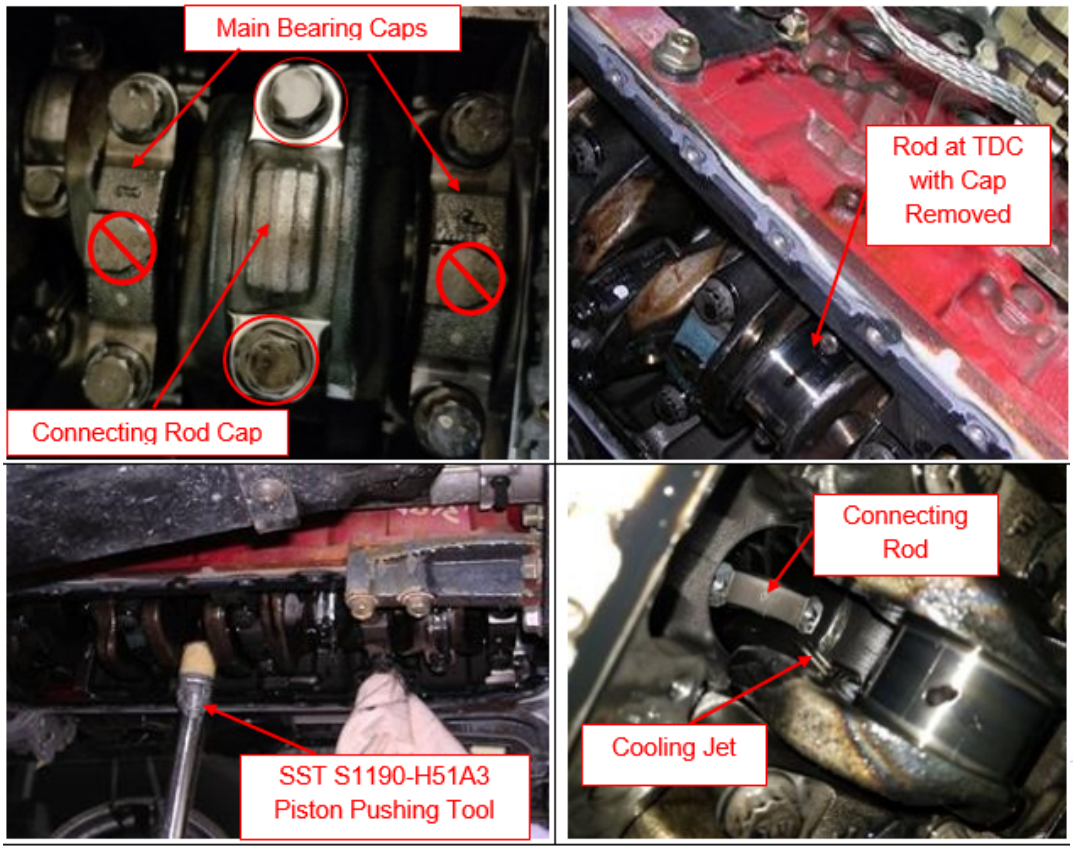
55. Rotate the engine so that cylinders 1 and 6 are at BDC. Remove the 2 bolts securing the connecting rod caps on cylinders 1 and 6, and remove the rod caps. After the rod caps are removed, rotate the engine so that cylinders 1 and 6 are at TDC (Top Dead Center). Once at TDC, use the piston pushing tool (SST: S1190-H51A3) or equivalent to push the piston and connecting rod out of the cylinder through the top. Once the pistons and connecting rods have been removed from cylinders 1 and 6, repeat this process again for cylinders 2 and 5, then for cylinders 3 and 4. Discard the connecting rod caps, bearings, and bolts. **Mark the order of the pistons as they are removed with a paint marker. Such markings are critical for reinstallation.**

NOTICE: Use extreme caution not to allow the connecting rod or piston pushing tool to contact the piston cooling jets during removal. The piston cooling jets are fragile.

NOTICE: DO NOT remove the main bearing bolts or caps for this procedure.



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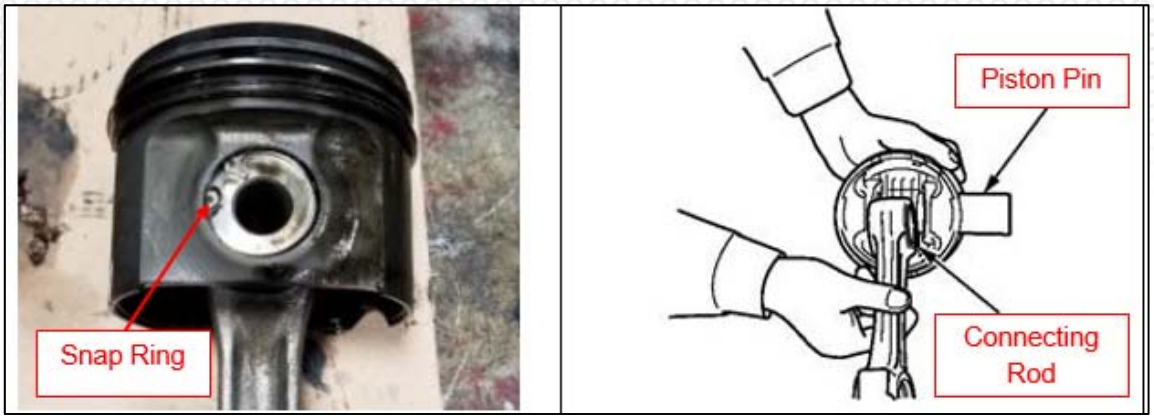
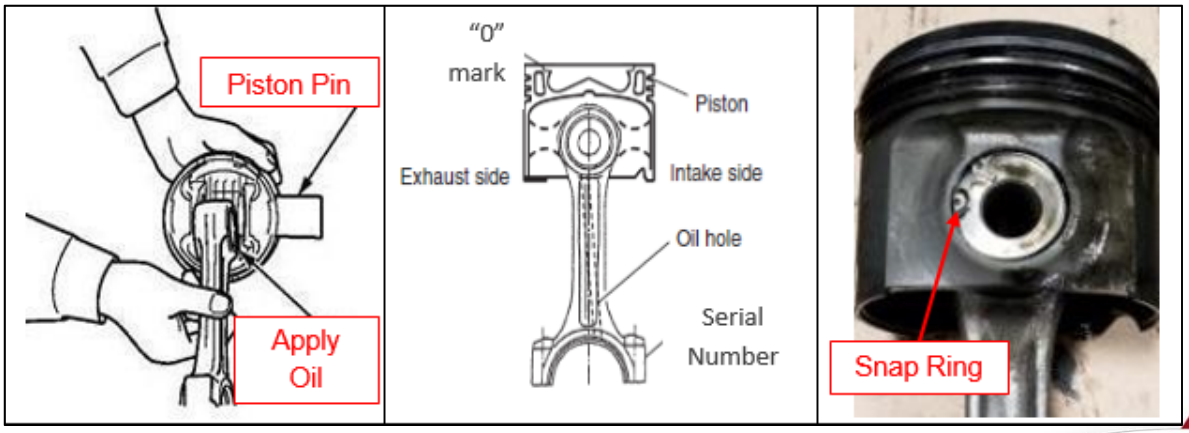
56. Remove the snap ring from one side the piston using snap ring pliers. Remove the piston wrist pin from the piston by pushing it through the bore. Use a brass drift if necessary. Remove the connecting rod from the piston and discard it. Retain the piston, pin, and snap ring for reinstallation. Repeat this process for the remaining 5 pistons.

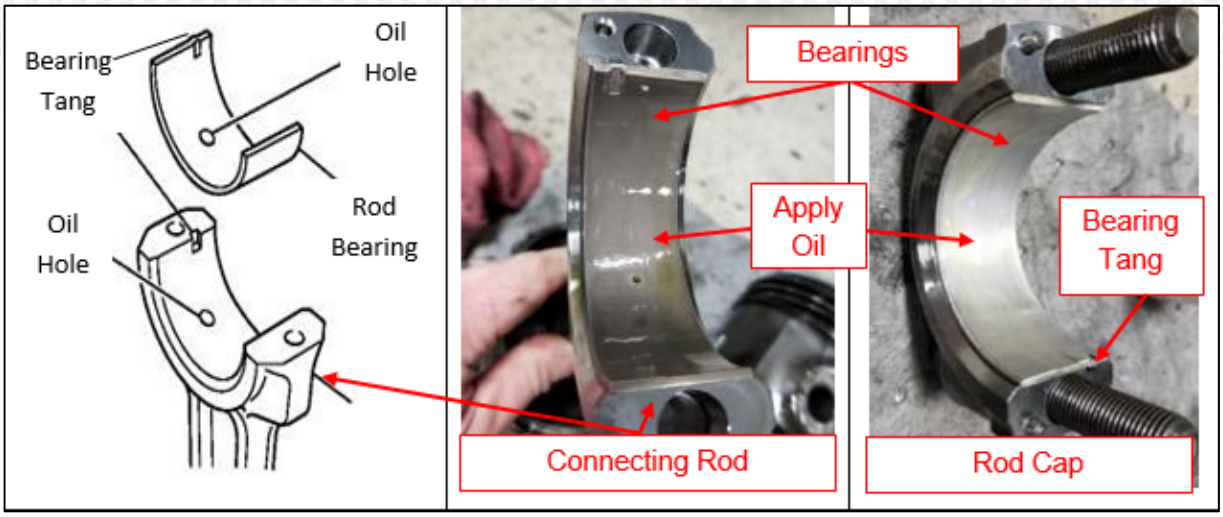


Assembly

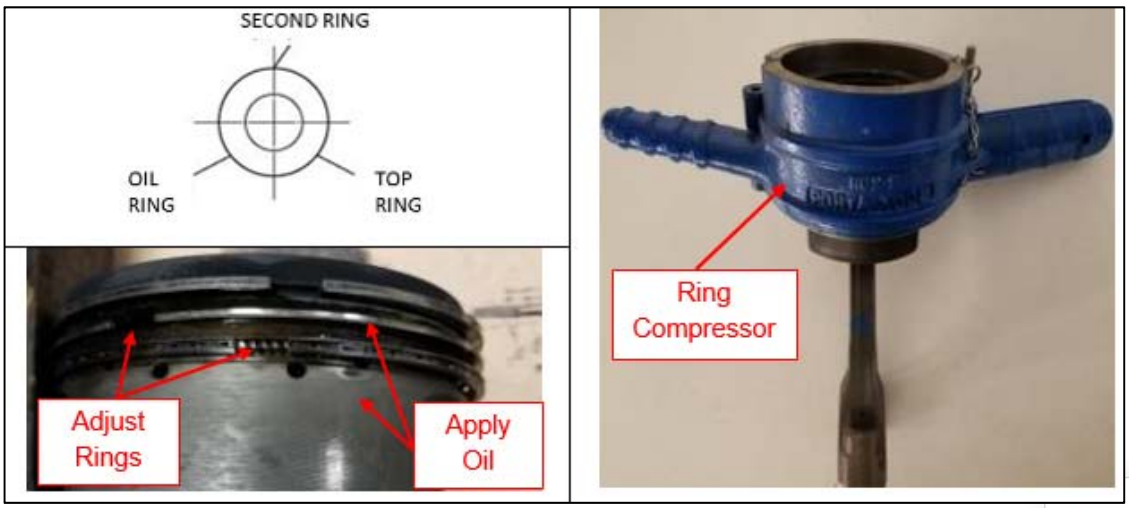
1. Using a new connecting rod, apply clean engine oil to the wrist pin bushing (small end). Assemble the piston to the connecting rod as shown in the illustration, below. The serial number on the connecting rod should be on the intake side of the piston, which is the opposite side of the “O” mark on top of the piston. Insert the wrist pin through the connecting rod and piston, and install the snap ring. Make certain the snap ring is fully seated in its groove. Repeat this procedure for the remaining 5 connecting rods and pistons.



2. Remove the cap from the new connecting rod and install the connecting rod bearings in the cap and connecting rod. Ensure the oil hole in the rod bearing aligns with the oil hole in the connecting rod. Apply engine oil to the bearing surfaces. **The connecting rod cap is matched to the connecting rod it was removed from, and cannot be mixed up with other rod caps**. Mark the connecting rod cap to the cylinder/piston to which it corresponds. Repeat this process for the remaining 5 connecting rods.



3. Verify correct orientation of the rings on the piston. The ring end gaps should be evenly spaced apart. Refer to the image below. Adjust ring gap position as needed. Apply clean engine oil to the piston and rings, and then insert the #1 piston in the piston ring compressor.



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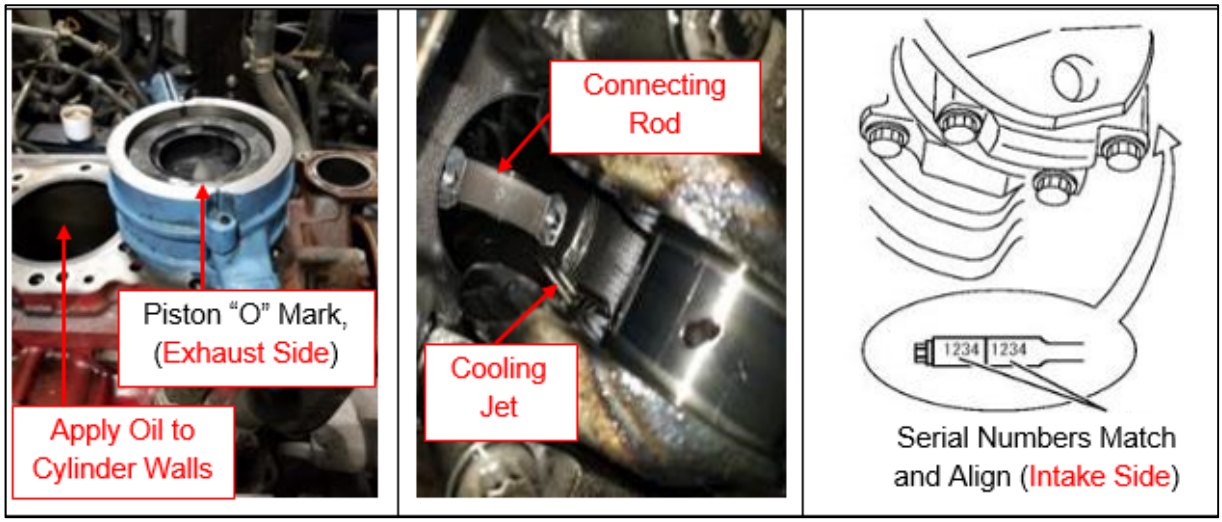
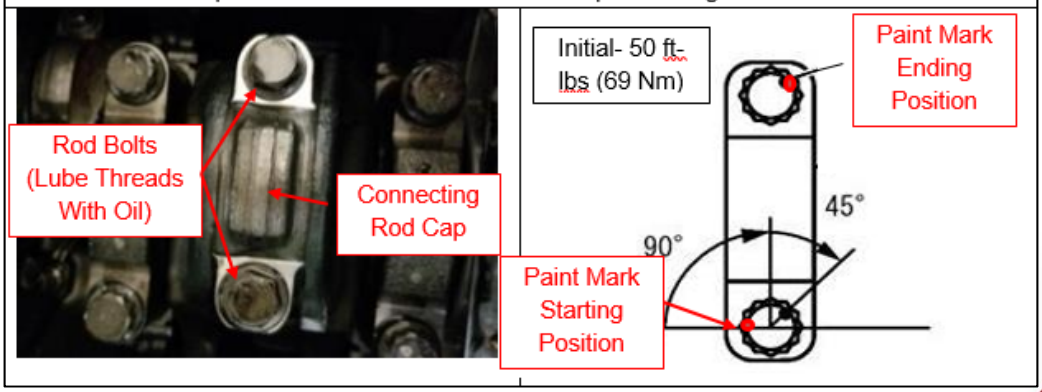
4. Rotate the crankshaft so cylinders 1 and 6 are at BDC. Clean the cylinder walls with a rag and apply clean engine oil onto all cylinder wall surfaces. While an assistant watches/guides from below, push the #1 piston into the #1 cylinder. Make certain that the connecting rod does not contact the cylinder wall or cooling jet. The piston and rod will need to be rotated around the cooling jet, and then rotated back over the crankshaft journal. Lube the connecting rod bolt threads with clean oil. Install the connecting rod cap making certain to align the serial numbers. Follow the torque sequence chart below. Repeat this process for cylinder 6. Once the pistons have been installed in cylinders 1 and 6, repeat this process again for cylinders 2 and 5, then for cylinders 3 and 4.

NOTICE: NEVER contact the piston cooling jets with the connecting rod during installation.



CONNECTING ROD BOLT TORQUE SEQUENCE: (Refer to the illustration below)

Step 1: Tighten each bolt to 50 lb-ft (69 Nm).
Step 2: Apply paint mark as shown below, tighten each bolt 90 degrees.
Step 3: Tighten each bolt an additional 45 degrees. The paint marks should both face the same direction when complete. **DO NOT** back off the bolt torque once tight.



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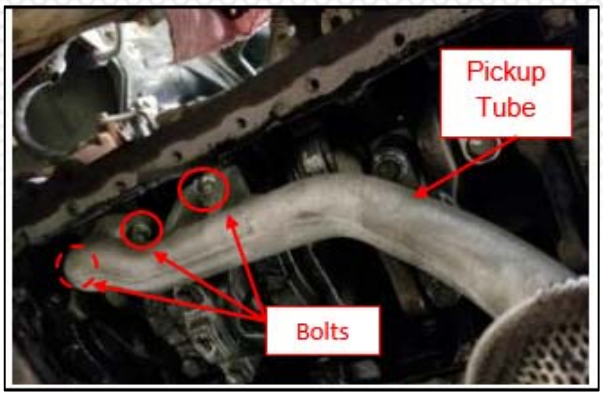
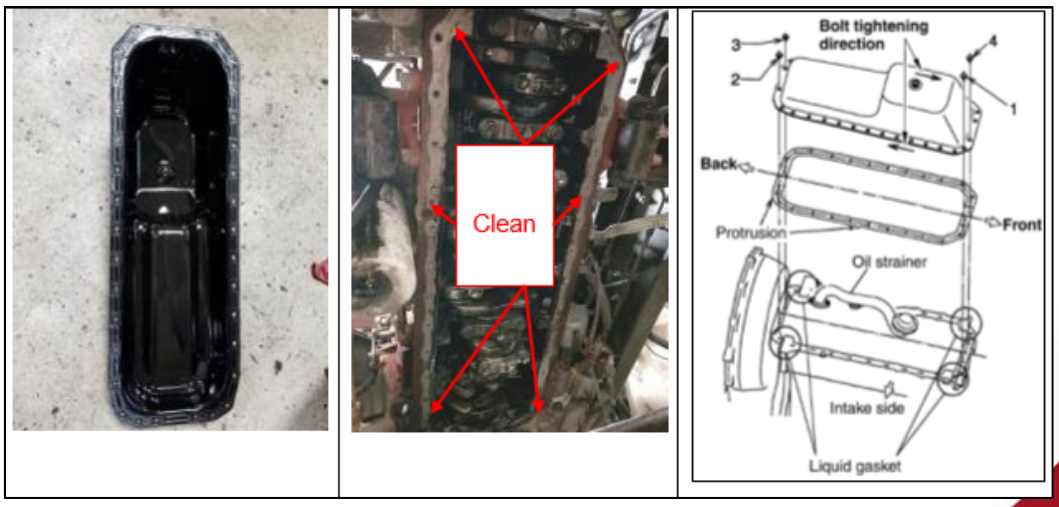
5. Install a new O-ring on the pickup tube and install the 3 bolts securing the oil pickup tube to the engine block. Tighten the bolts to the specified torque.
Specified Torque: 21 lb-ft (29 Nm)



6. Clean the gasket sealing surfaces on the oil pan and engine block. Tap the gasket loose with a small hammer if necessary and scrape the rest of the gasket material off. Apply liquid gasket maker, as shown below, in the 4 corners. Install the oil pan using a new oil pan gasket and drain plug gasket. Tighten the 4 corner bolts first to 16 lb-ft (22 Nm), and then tighten all 34 oil pan bolts to the specified torque. Apply the final torque a second time to all oil pan bolts.
Specified Torque: 22 lb-ft (30 Nm)

NOTICE: DO NOT use surface conditioning discs, such as scotch-brite™, or similar cleanup discs on a die grinder to clean the engine block or engine failure may occur. Also, do not use sand paper or any power tools to clean gasket surfaces. Refer to Tech Tip **TT-15-019** on Hinonet for more information, if needed. **DO NOT** leave dust or particles inside of the oil pan or engine block, or an engine failure may occur.



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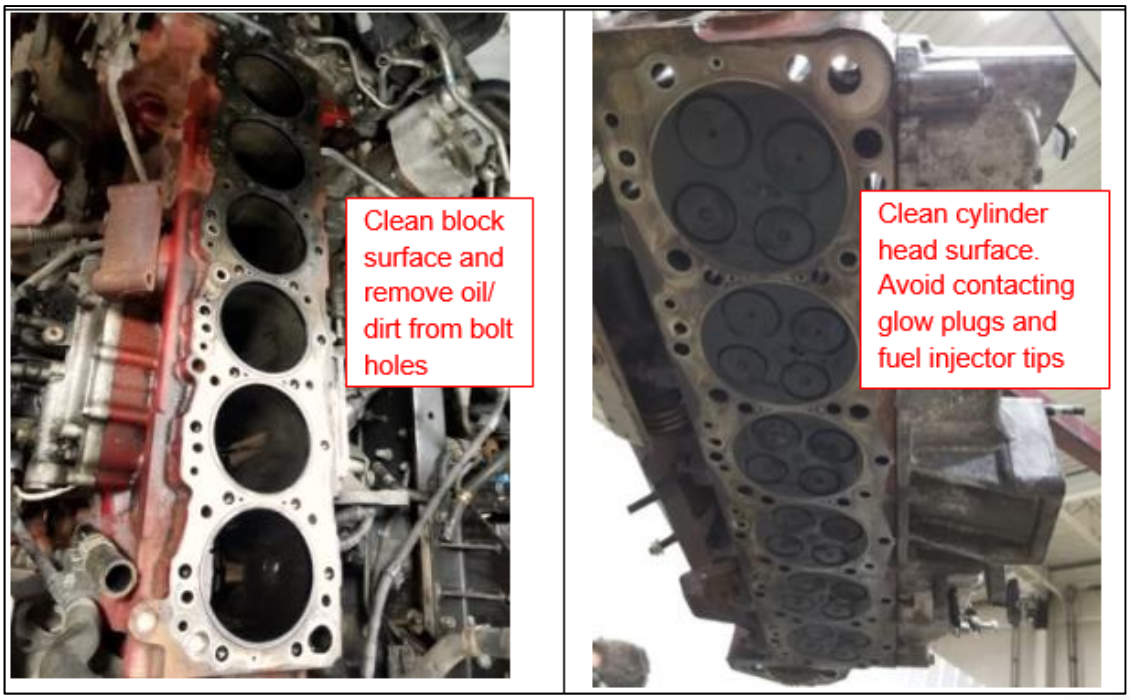
7. Remove and replace the current oil filter with a new oil filter. Discard the replaced oil filter.

8. Clean the gasket sealing surface of the engine block and cylinder head using parts cleaner and rag. Use a scraper as needed to scrape off any gasket material or carbon stuck to the head and block. Avoid contacting the glow plugs and fuel injector tips with the scraper. Remove any dirt or oil from the head bolt holes in the engine block.

NOTICE: DO NOT use abrasive power tools to clean the engine block or cylinder head.



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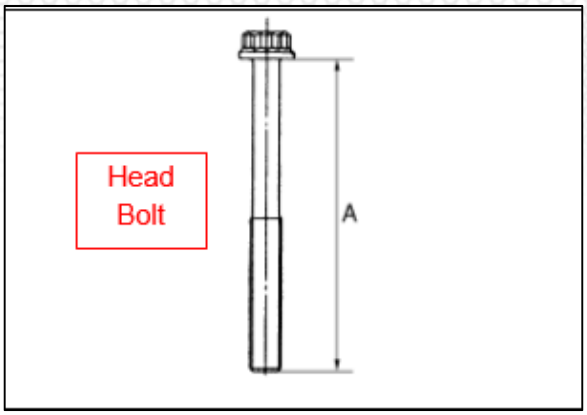
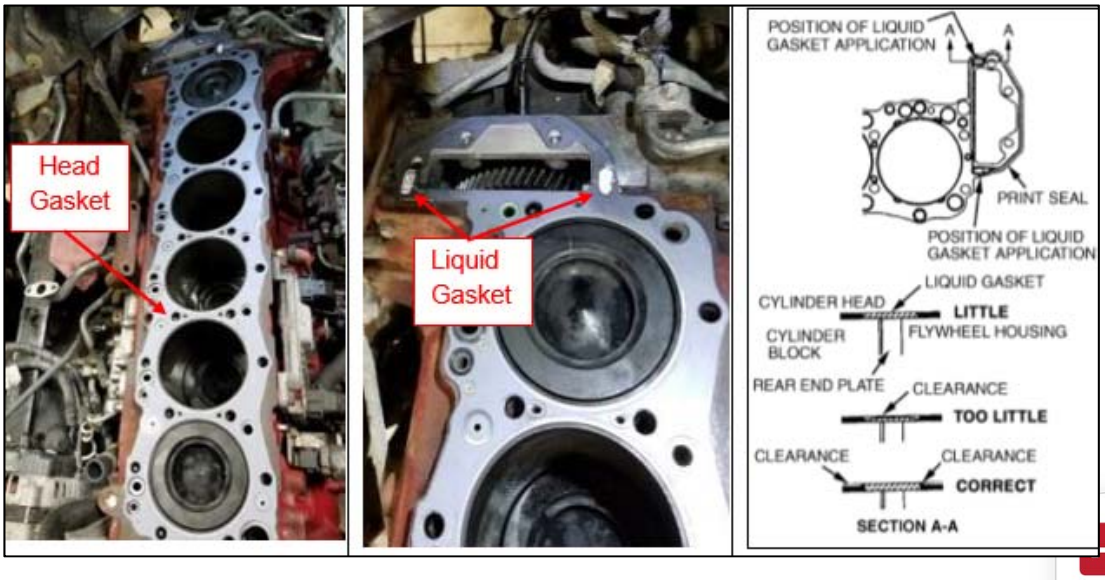
9. Measure the length of each of the 26 M12 head bolts. If the bolt measures longer than dimension A, the head bolt must be replaced. If the measurement is equal to or less than Dimension A, the head bolt should be reused.
Dimension A: 4.941 inches (125.5mm)



10. Make certain that the engine block and cylinder head sealing surface are free of dirt, water, or oil. Install the cylinder head gasket on the block. Apply Hino White liquid gasket to the 2 positions illustrated below (on either side of the geartrain). Use caution not to damage the head gasket sealing rings. The cylinder head must be installed within 20 minutes of applying the liquid gasket.

NOTICE: The sealing surfaces and bolt holes must be clean of dirt, water, and oil.



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11. With the aid of an assistant, install the cylinder head onto the engine. Use caution not to scrape or damage the head gasket when lowering the head into place.

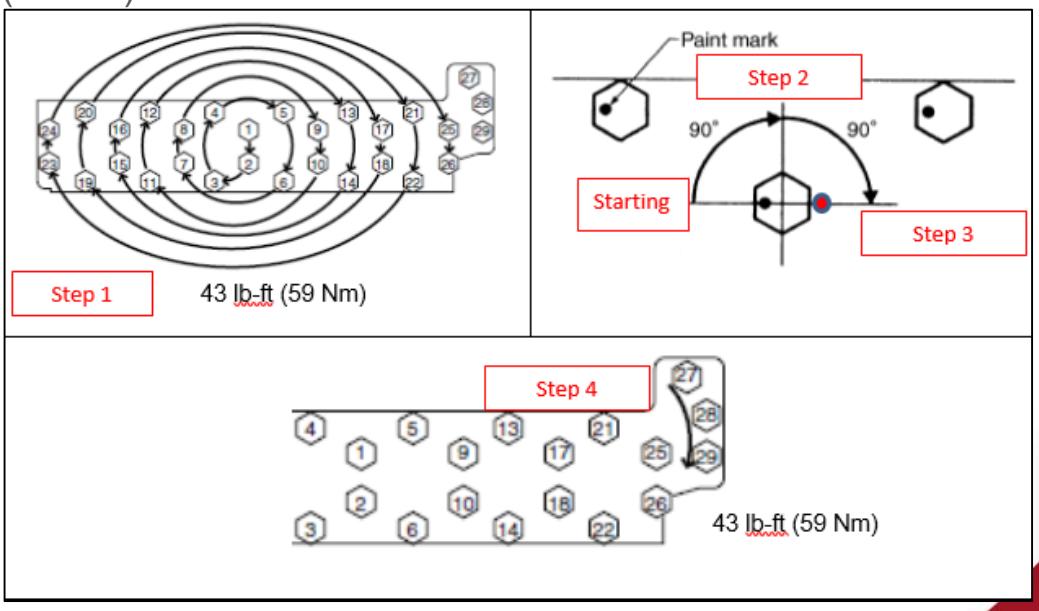
12. There are 29 head bolts. 26 larger M12 head bolts and 3 smaller M10 head bolts. Apply a thin coat of clean engine oil to the bolt surface and bolt threads of all 29 bolts. The 26 M12 head bolts are tightened in 3 steps, described below. The 3 M10 head bolts are tightened in the 4th step.

Step 1: Tighten the 26 larger M12 head bolts in the sequence shown below to 43 lb-ft (59 Nm).

Step 2: Apply a paint mark to each of the 26 of the M12 head bolts. All paint marks should face the same direction. Tighten the 26 M12 bolts 90 degrees in the sequence shown below.

Step 3: Tighten the 26 M12 bolts an additional 90 degrees in the sequence shown below. The paint marks should all be facing 180 degrees away from where they started. (See Below)

Step 4: Tighten the 3 M10 bolts (27-29 at the rear of the head) to 43 lb-ft (59 Nm).



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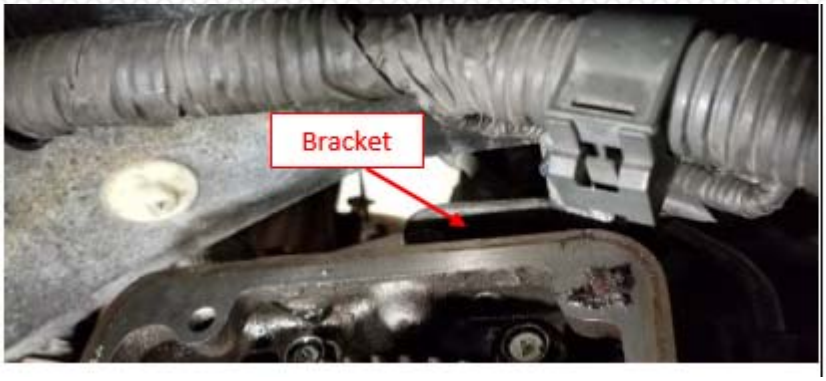
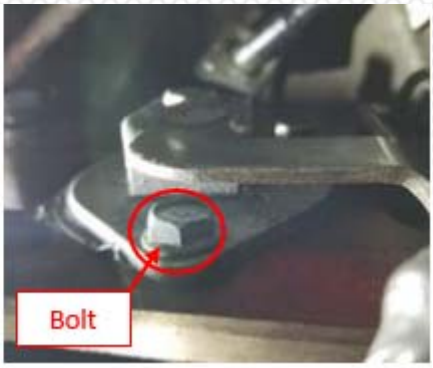
13. Install the bolt securing the harness bracket to the back of the cylinder head and tighten to the specified torque.

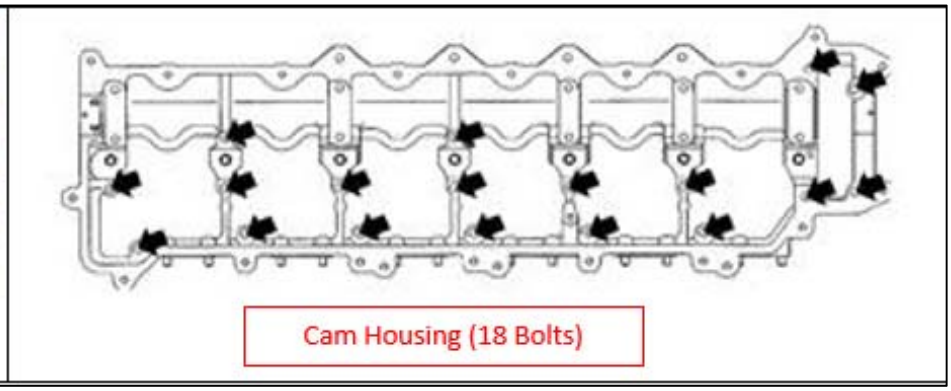
Specified Torque: 21 lb-ft (28.5 Nm)





14. Clean the cam housing, and install it on the cylinder head using a new gasket. Install the 18 bolts securing the cam housing to the cylinder head and tighten them to the specified torque. Plug in the camshaft position sensor at the back of the cylinder head.

Specified Torque: 17 lb-ft (23 Nm)



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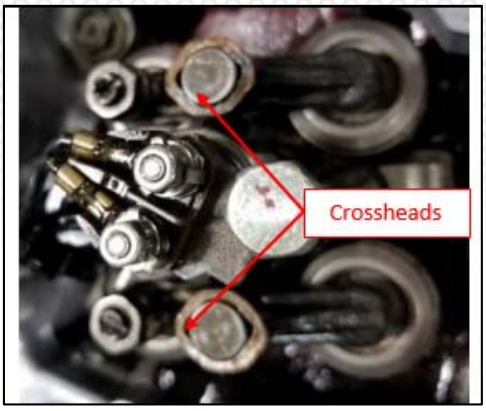
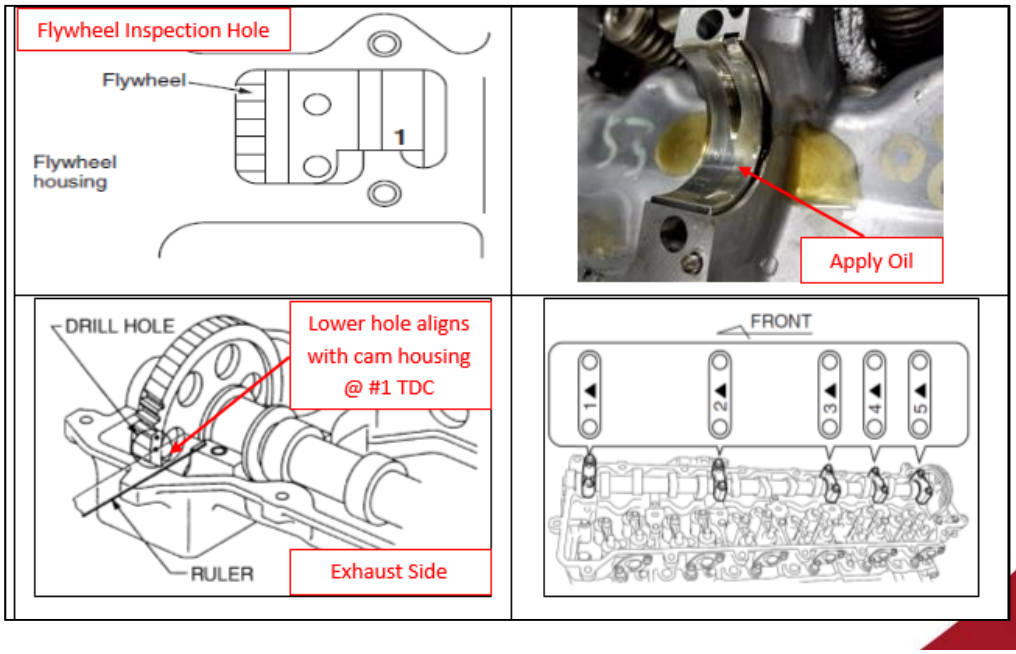
15. Install the 12 valve bridges (crossheads) onto the cylinder head in the order in which they were removed. Make certain the crossheads are fully seated on the valve stems by rocking them back and forth after installing them. They should not rotate. (2 of the 12 crossheads are shown in the photo below.)



16. Rotate the engine so that cylinder 1 is at TDC compassion stroke by viewing the position of the engine through the flywheel inspection hole. Make certain all bearings are present, clean, and undamaged in the cam housing and in the bearing caps. Apply engine oil to the camshaft bearings. Install the camshaft into the cam housing referencing the timing marks on the cam gear. On the exhaust side of the engine, the lower dot should be level with the top surface of the cam housing. Use a thin ruler to verify the correct position of the camshaft before installing the bearing caps as illustrated below. The bearing caps are numbered, with arrows indicating the direction and position. Refer to the illustration, below. Install the 5 cam bearing caps. Install the 10 cam bearing cap bolts and tighten to the specified torque. **Specified Torque:** 23 lb-ft (31 Nm)



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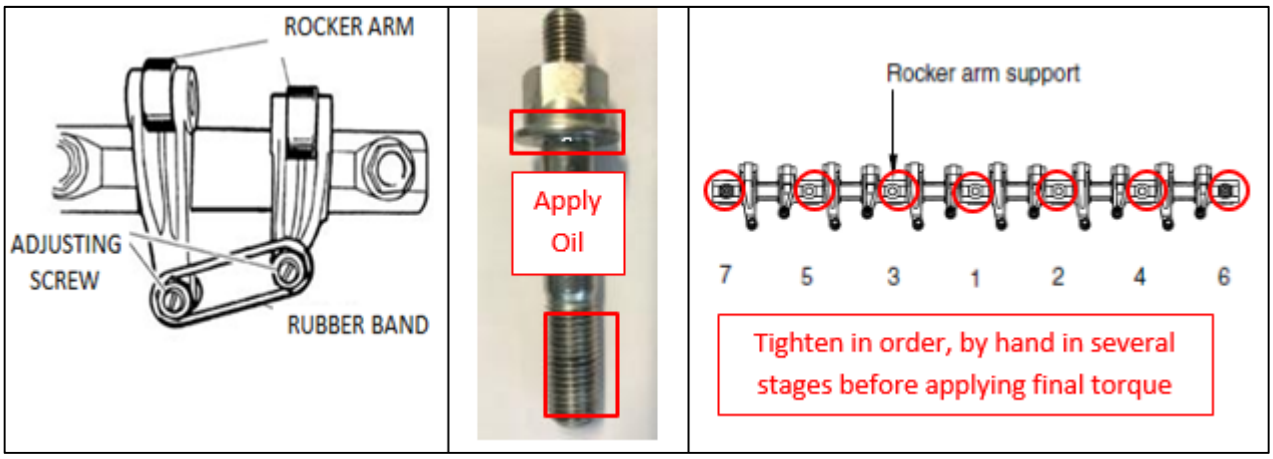
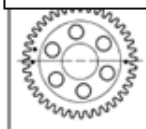
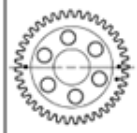
17. Prepare the rocker shaft for installation. Make certain no oil or dirt is present in the rocker shaft bolt holes in the cam housing. Make certain that all adjusting screws are fully wound up on the rocker arms. Rubber bands can be installed between each rocker arm to aid in installation. Make certain the rubber bands are removed after installation. Install the rocker shaft using new bolts with a light coating of engine oil on the bolt threads and bolt heads. The rocker shaft must be gradually tightened down, by hand, in several stages, in the order illustrated below. Once all bolts are all snug, tighten them to the specified torque. If the specified torque cannot be achieved for any bolt, the cam housing **must** be replaced.

Specified Torque: 33 lb-ft (45Nm)

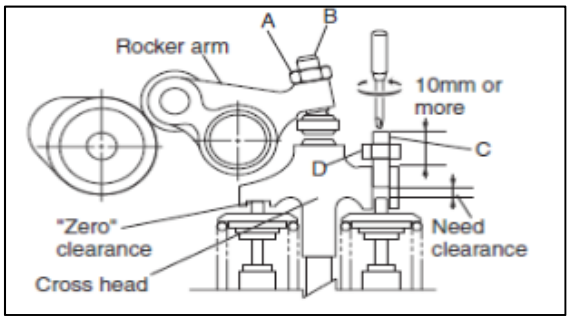
NOTICE: NEVER use power tools to tighten down the rocker shaft bolts.



18. This step will provide direction on adjusting the valve lash. Valve lash is adjusted with some valves at cylinder 1 TDC compression stroke, and others at cylinder 6 TDC compression stroke. Refer to the chart below. Adjust the 6 valves indicated below when cylinder 1 is at TDC compression, and the other 6 indicated below while cylinder 6 is at TDC compression. All 24 adjusting screws should be completely loose at the beginning of the adjustment.

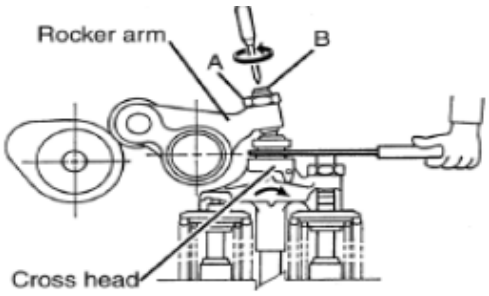
	Cylinder			1		2		3		4		5		6	
	Valve			IN	EX	IN	EX	IN	EX	IN	EX	IN	EX	IN	EX
With No.1 piston at T.D.C. on compression stroke	Camshaft gear condition	Front View 	Two drill holes and camshaft housing is horizontal. The rest of drill hole is visible. #1	○	○		○	○			○	○			
With No.6 piston at T.D.C. on compression stroke			Two drill holes and camshaft housing is horizontal. The rest of drill hole is invisible. #1			○			○	○			○	○	○

A. Loosen the adjusting screws (B) and (C) fully. The crosshead adjusting screw (C) must protrude at least 10mm above the crosshead upper face.



B. Insert the specified feeler gauge between the crosshead and rocker arm. Tighten adjusting screw (B) until the rocker arm adjuster contacts the feeler gauge and a slight amount of drag is felt on the feeler gauge between the rocker arm and crosshead. Once the adjustment is obtained, tighten the lock nut (A) to the specified torque.

Specified Torque: 18 lb-ft (25 Nm)



Specifed Feeler Gauge:

Intake Valve: 0.0118" (0.30mm)

Exhaust Valve: 0.0177" (0.45mm)

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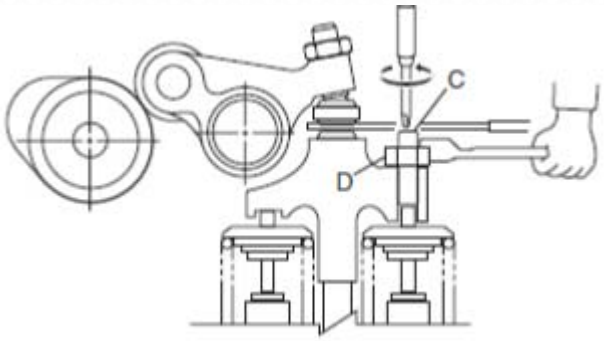
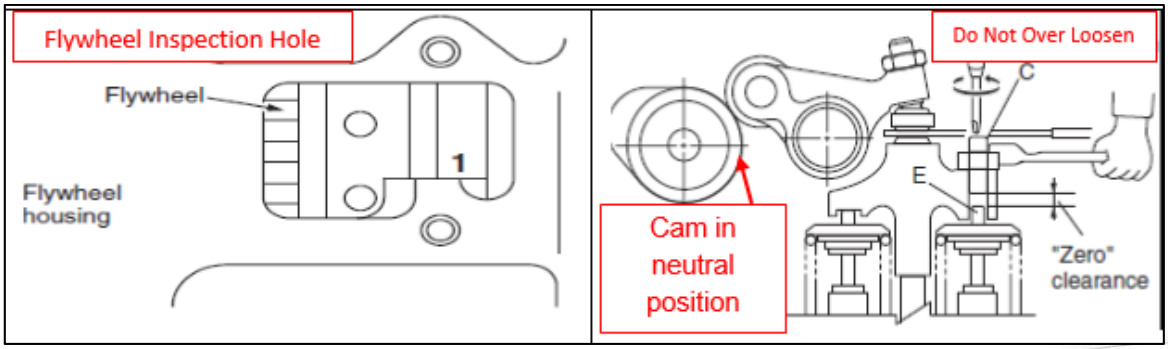
C. With the specified feeler gauge in place, tighten the crosshead screw (C) until the feeler gauge is tight and does not move. There should be zero clearance between the crosshead and valve stem. Now, back off the adjuster screw (C) until the feeler gauge can be moved and there is some drag present between the crosshead and rocker arm. Do not over-loosen screw (C) or there will be excessive clearance. Once the adjustment is obtained, tighten the lock nut (D) to the specified torque.

Specified Torque: 18 lb-ft (25 Nm)



Specifed Feeler Gauge:
Intake Valve: 0.0118" (0.30mm)
Exhaust Valve: 0.0177" (0.45mm)

D. After each of the 24 lash adjusters have been adjusted at the specified 1 or 6 positions, recheck the lash adjustment with each piston at the TDC compression stroke in the firing order (1-4-2-6-3-5). This position can be determined by rotating the crankshaft counterclockwise to view the mark on the flywheel through the inspection hole. The camshaft lobes should be in the neutral position. Use the specified feeler gauge to check valve lash. If valve lash is too tight or too loose with the cylinder at TDC, repeat steps A through C, above, as needed. Make certain that adjuster screw (C) is not over-loosened, with minimal clearance present at position (E). You should be able to slightly wiggle the crosshead with the feeler gauge removed.



Specifed Feeler Gauge:
Intake Valve: 0.0118" (0.30mm)
Exhaust Valve: 0.0177" (0.45mm)

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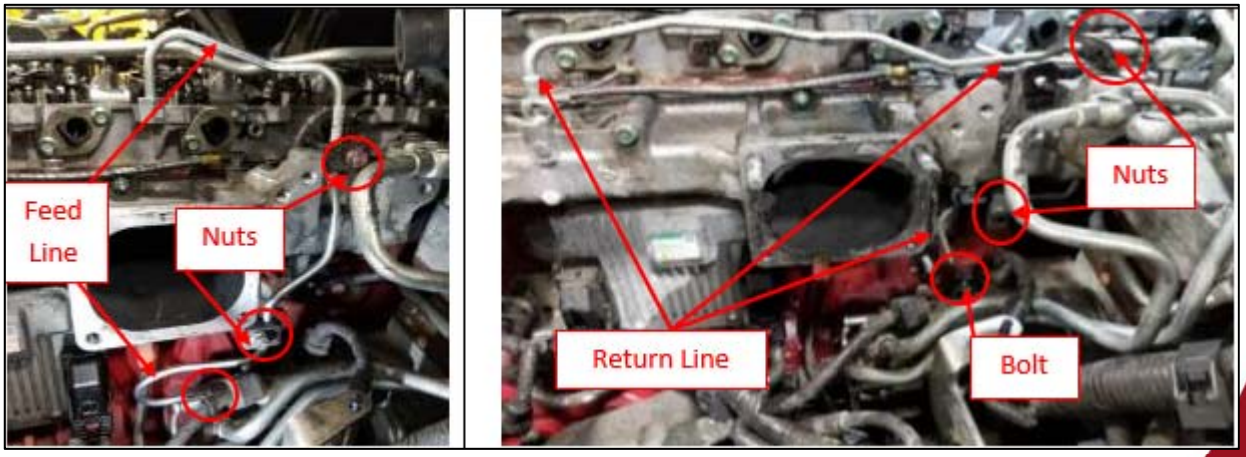
19. Install the 12 bolts into the 6 injector grommets and tighten to the specified torque.

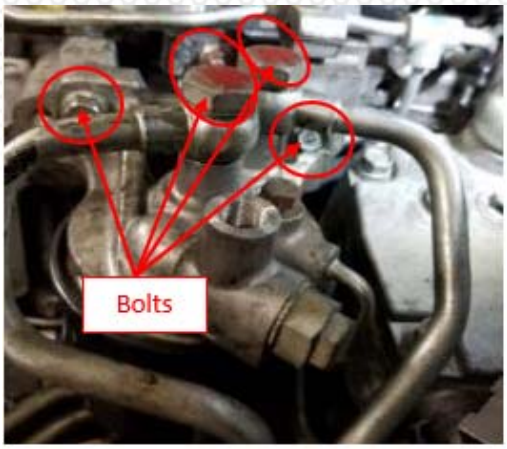
Specified Torque: 21 lb-ft (28.5 Nm)

20. Install the new fuel feed line, and install the 2 nuts/clamps that secure it to the engine. Tighten the line fitting at the fuel pump to the specified torque. Install the fuel return line, and install the 2 nuts/clamps that secure it to the engine. Install the banjo bolt into the fuel pump using new soft washers, and tighten to the specified torque.

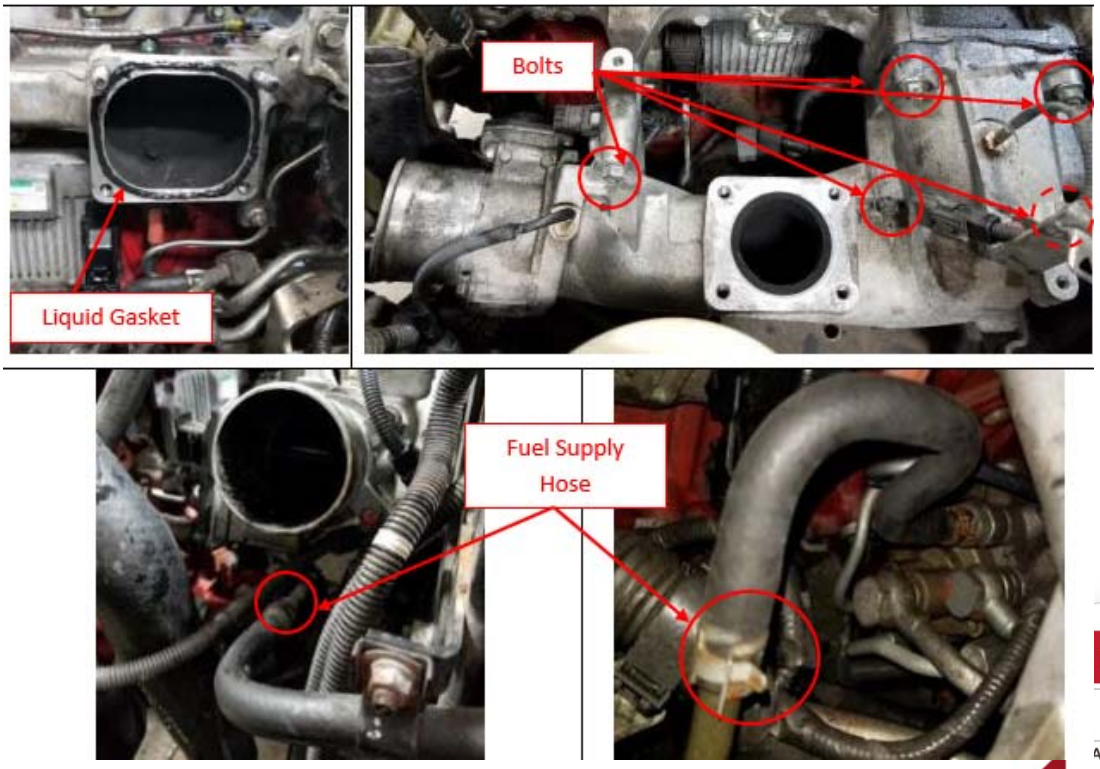
Specified Torue (Feed Line at Pump): 32.5 lb-ft (44 Nm)
Specfiied Torque (Return Line at Pump): 15 lb-ft (20Nm)
Specified Torque (M8 Nuts on clamps): 4 lb-ft (6 Nm)



21. Install the 2 bolts that secure the bubbler to the intake manifold and tighten to the specified torque. Install the 2 banjo bolts using new soft washers. Tighten the banjo bolts to the specified torque.
Specified Torque (Bubbler): 41 lb-ft (55 Nm)
Specified Torque (Banjo Bolts): 18 lb-ft (25 Nm)



22. Clean the intake elbow gasket mating surfaces. Apply Hino Black liquid gasket in a 1.5-2.5 mm width around the intake port. Install the intake elbow and tighten the 3 bolts and 2 nuts to the specified torque. Connect the 2 fuel supply hose connections below the intake elbow.
Specified Torque: 41 lb-ft (55 Nm)



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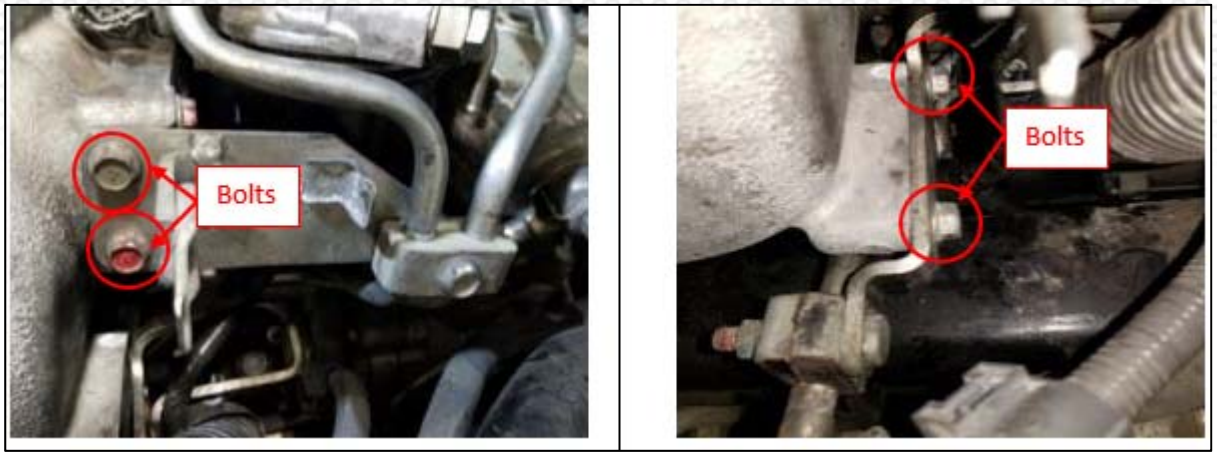
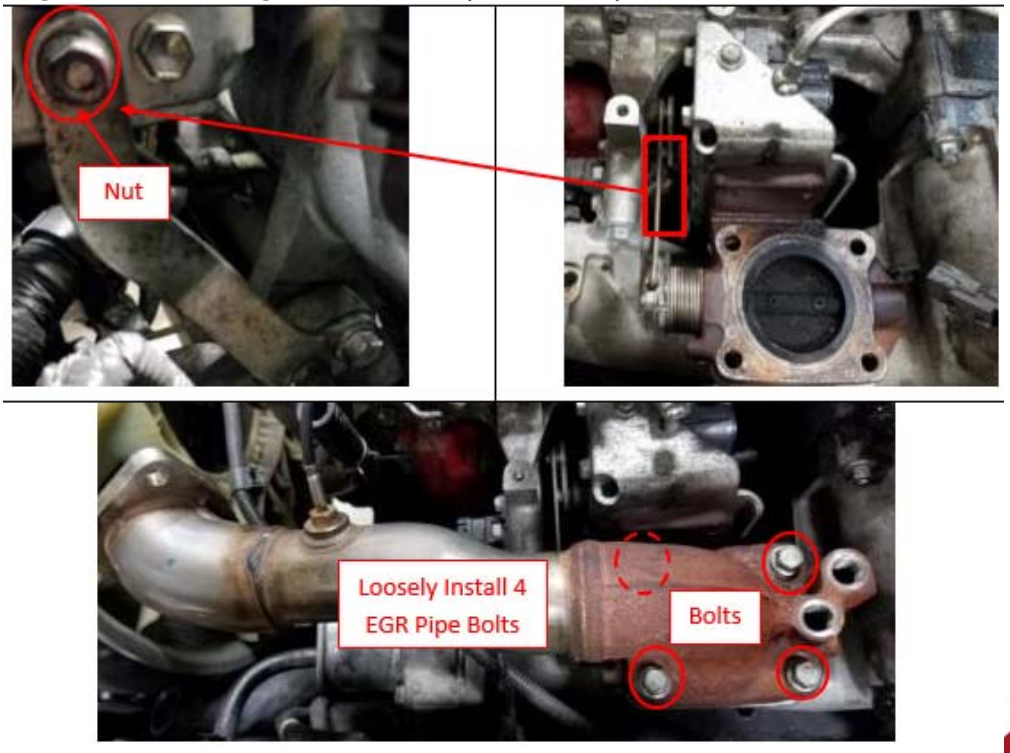
23. Install the 2 bolts securing the fuel line bracket to the intake manifold. Install the 2 bolts securing the dipstick bracket to the intake manifold. Tighten to the specified torque.

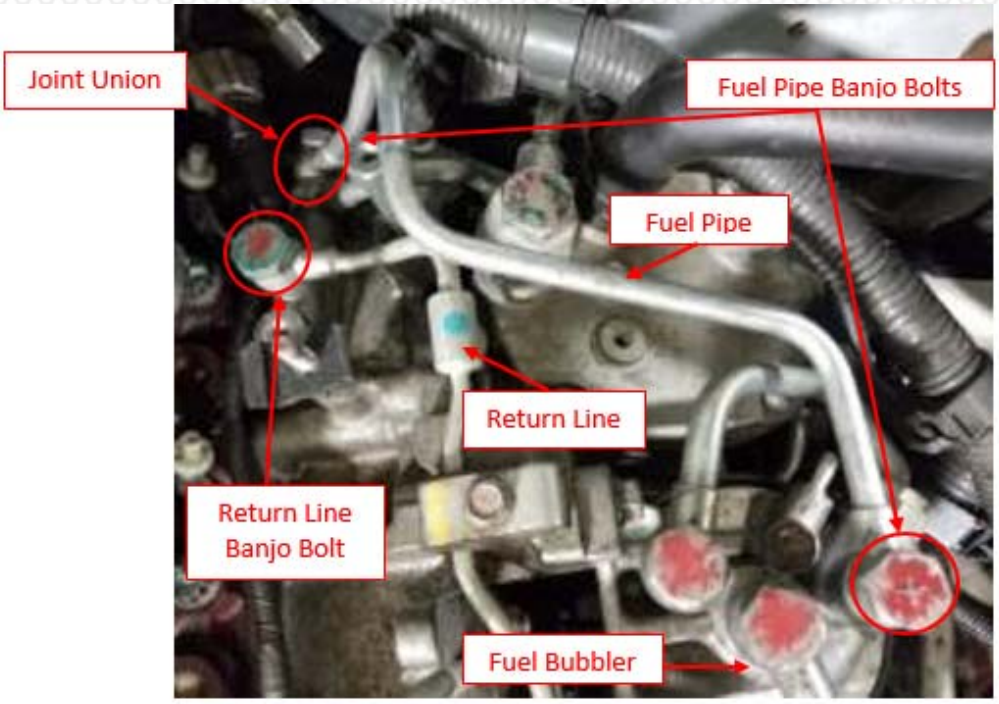
Specified Torque: 21 lb-ft (28.5 Nm)



24. Install the EGR valve using a new gasket below it. Install the nut securing the bracket below the EGR valve. Connect the EGR valve electrical connector. Loosely install the EGR pipe with a new gasket below it. The EGR pipe will be tightened when the EGR cooler is installed.
Specified Torque: 21 lb-ft (28.5 Nm)



25. Install the fuel pipe using 3 new soft washers at the joint union and 2 new soft washers at the bubbler. Tighten the 2 fuel pipe banjo bolts to the specified torque. Install the return line banjo bolt into the intake manifold using 2 new soft washers and tighten to the specified torque.
Specified Torque (Fuel Pipe): 18 lb-ft (25 Nm)
Specified Torque (Return Line): 15 lb-ft (20 Nm)



26. Install the return pipe between the intake manifold and the cam housing using the banjo bolts with new soft washers. Tighten to the specified torque.

Specified Torque: 10 lb-ft (13 Nm)

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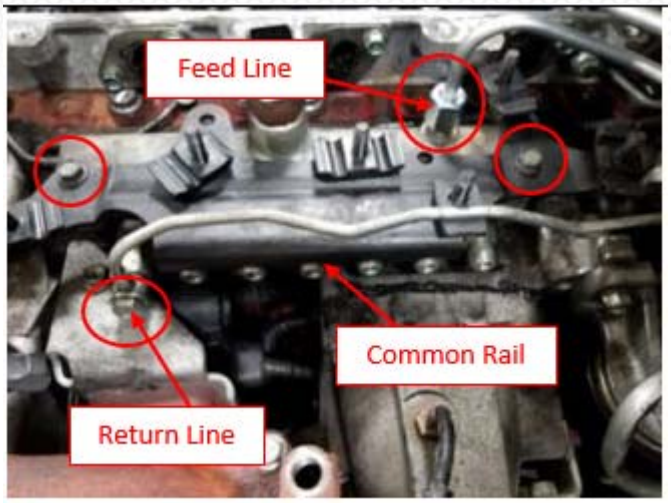
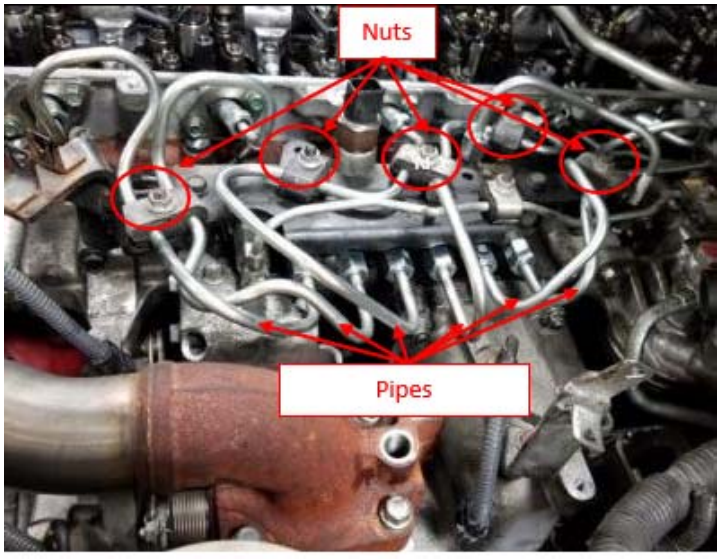
27. Install the common rail to the intake manifold using 2 bolts. Install the return line banjo bolt using new soft washers. Tighten the fuel feed line fitting and the return line bolt to the specified torque.

Specified Torque (Feed Line): 40 lb-ft (54 Nm)
Specified Torque (Return Line): 15 lb-ft (20 Nm)
Specified Torque (Common Rail): 21 lb-ft (28.5 Nm)



28. Loosely install the 6 fuel injector pipes between the common rail and fuel injectors. Tighten the 5 nuts/clamps that secure the intake pipes to the common rail. Tighten the fuel injector pipes to the specified torque at the injector and the common rail.

Specified Torque (Pipe Fittings): 32.5 lb-ft (44 Nm)
Specified Torque (M8 Nuts): 4 lb-ft (6 Nm)



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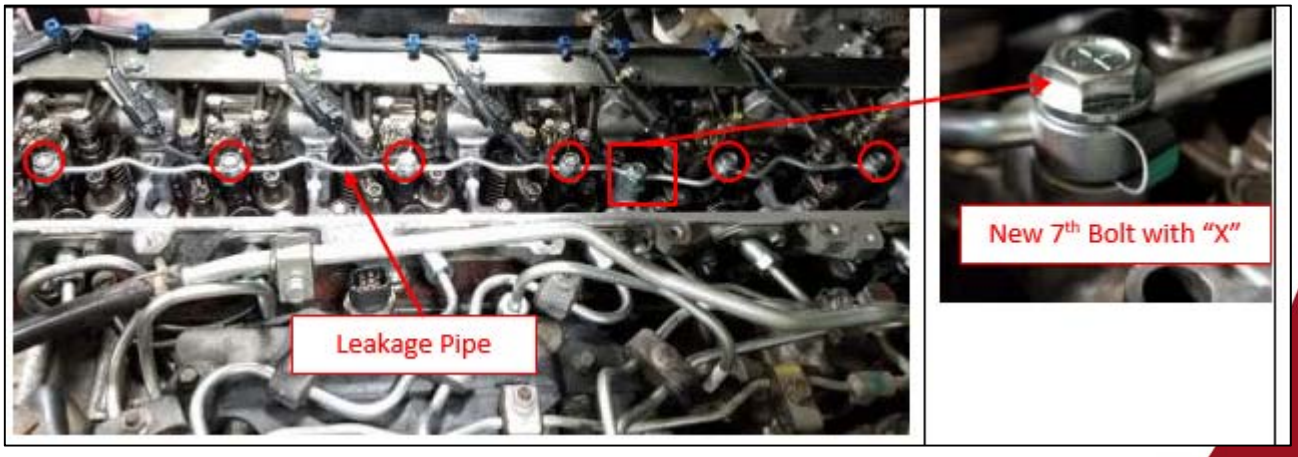
29. Install the injector harness. Tighten the 7 nuts securing the injector harness to the specified torque. Connect the fuel injectors to the harness. Connect the injector harness to the cam housing connection.

Specified Torque: 10 lb-ft (13.5 Nm)

30. NOTICE: The leakage pipe can be easily damaged if the bolts are over-torqued. Use caution when tightening the banjo bolts to avoid twisting the pipe or severe engine damage may occur.
Install the leakage pipe to the fuel injectors with new soft washers using the 6 banjo bolts previously removed. Use a new banjo bolt (with X mark) and soft washer where the pipe attaches to the cam housing. Note: this 7th bolt has a different thread pitch than the injector bolts. Tighten all 7 bolts to the specified torque.
Specified Torque: 10 lb-ft (13.5 Nm)



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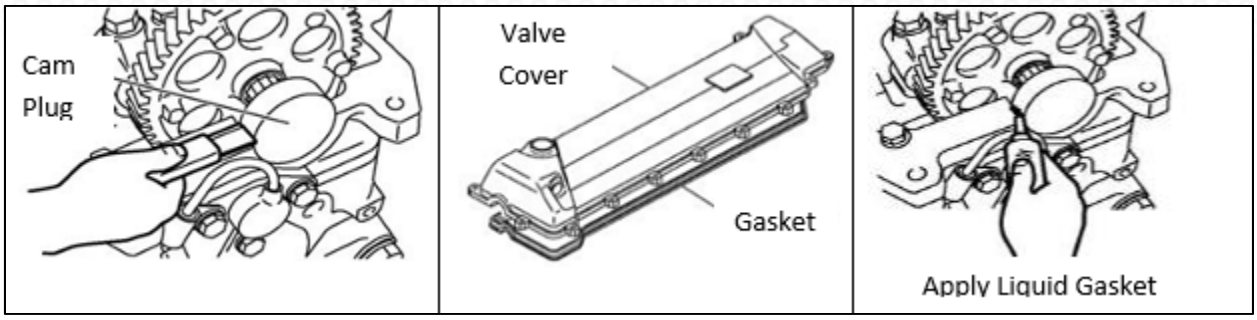
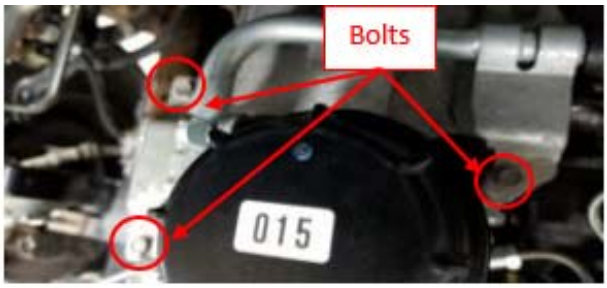
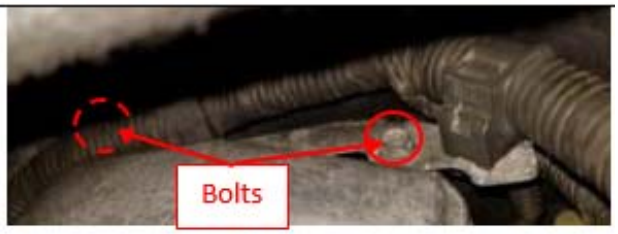
31. Clean the valve cover sealing surfaces. Remove any sealer remaining. Install a new gasket into the valve cover. Apply Hino Black liquid sealer to the corners of the camshaft housing plugs at a 1.5mm to 2mm width. Install the 14 bolts. Make sure to insert the correlating bolts through the coolant crossover bracket and harness bracket. Tighten the 14 valve cover bolts to the specified torque.

Specified Torque: 21 lb-ft (28.5 Nm)

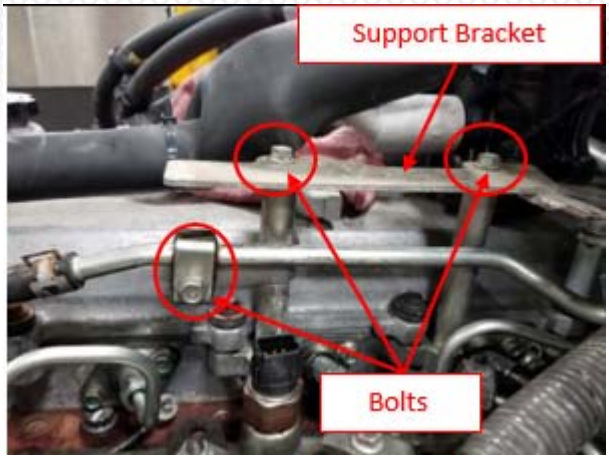




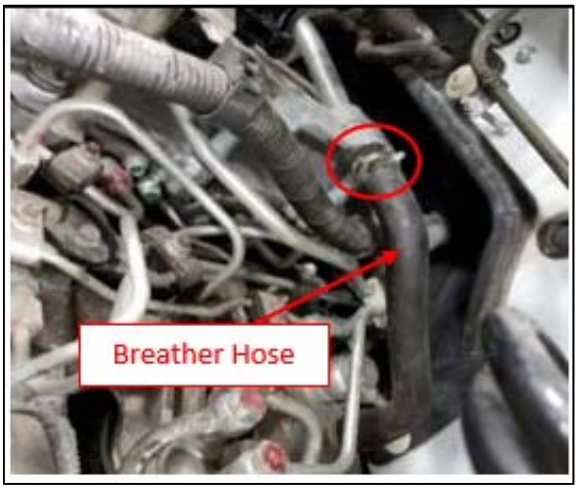


32. Install the 2 bolts securing the support bracket to the cam housing. Install the bolt/clamp securing the coolant pipe to the support bracket. Tighten the bolts to the specified torque.

Specified Torque (Bracket Bolts): 21 lb-ft (28.5 Nm)
Specified Torque (M8 Clamp Bolt): 4 lb-ft (6 Nm)



33. Connect the air compressor breather hose.



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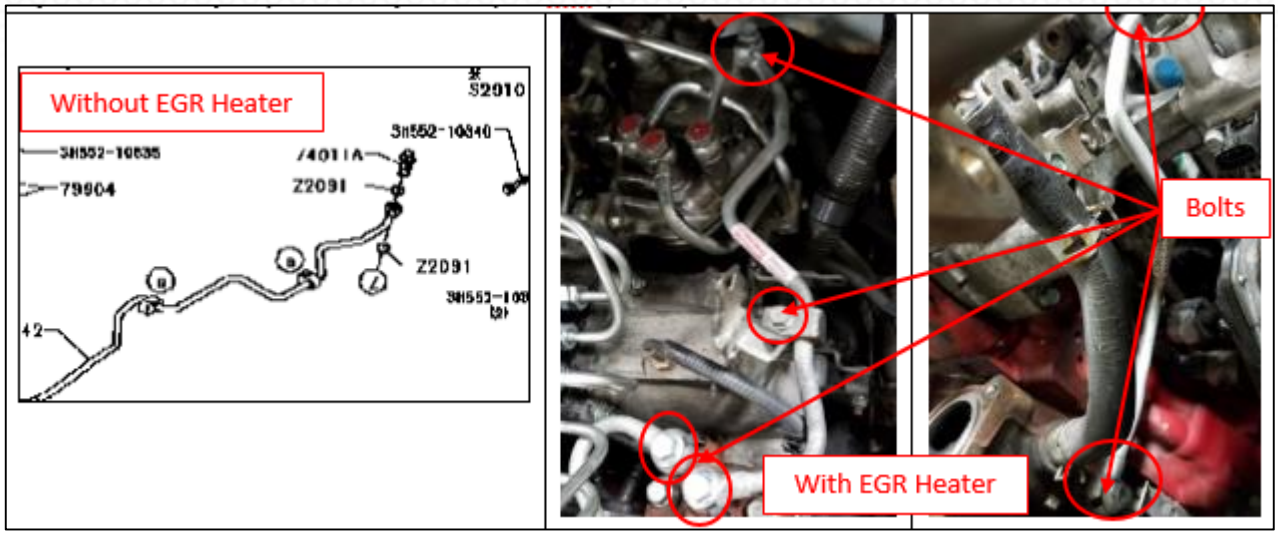
34. Install the air compressor coolant pipe. Install the 2 clamp/bolts that secure the pipe to the engine. Install the banjo bolts into the pipe and tighten to the specified torque. If equipped with EGR heater, install the 2 banjo bolts into the EGR pipe using new soft washers and tighten to the specified torque.

Specified Torque (Banjo Bolts): 21 lb-ft (28.5 Nm)
Specified Torque (M8 Clamp Bolts): 4 lb-ft (6 Nm)



35. On the intake side, connect the 9 wire harness clips, 2 intake temperature sensors, boost pressure sensor, fuel pressure sensor, fuel injector harness connector, and glow plug harness connector.

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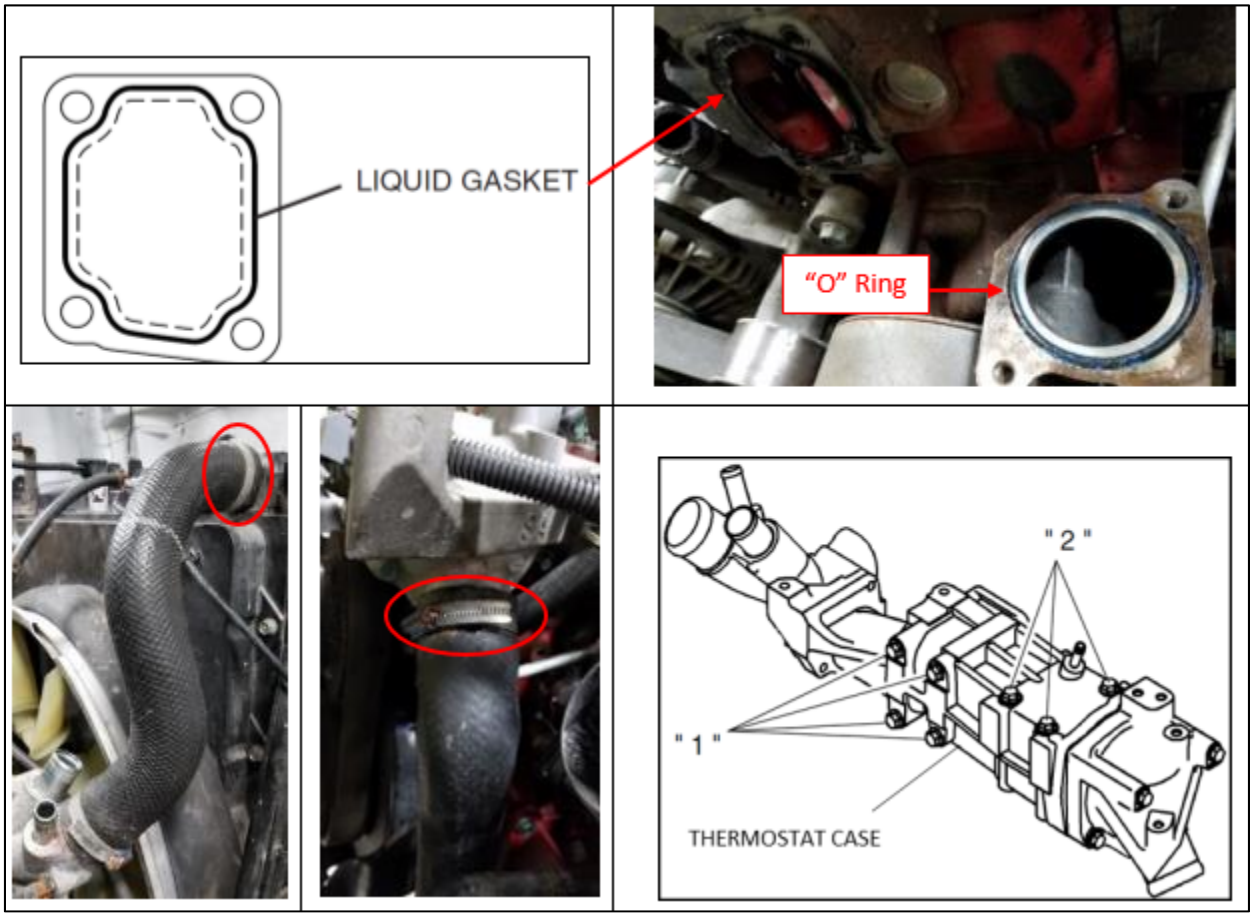
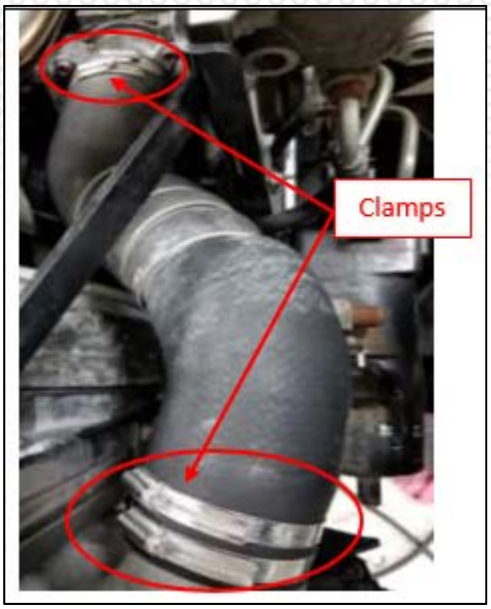
36. Clean the gasket mating surfaces on the engine block and on the thermostat housing. Apply a 1.5-2mm band of Hino Black liquid gasket around the coolant passage. Install a new “O” ring on the water pump. Install the 7 bolts securing the thermostat housing to the engine. First, snugly tighten the bolts labeled “1” in the diagram below, referring to the THERMOSTAT CASE. Next, snugly tighten the bolts labeled “2” in the diagram. Tighten the 7 bolts to the specified torque. Connect the upper radiator hose at the radiator. Connect the lower radiator hose at the thermostat housing. Connect the coolant temp sensor.

Specified Torque: 26 lb-ft (36 Nm)



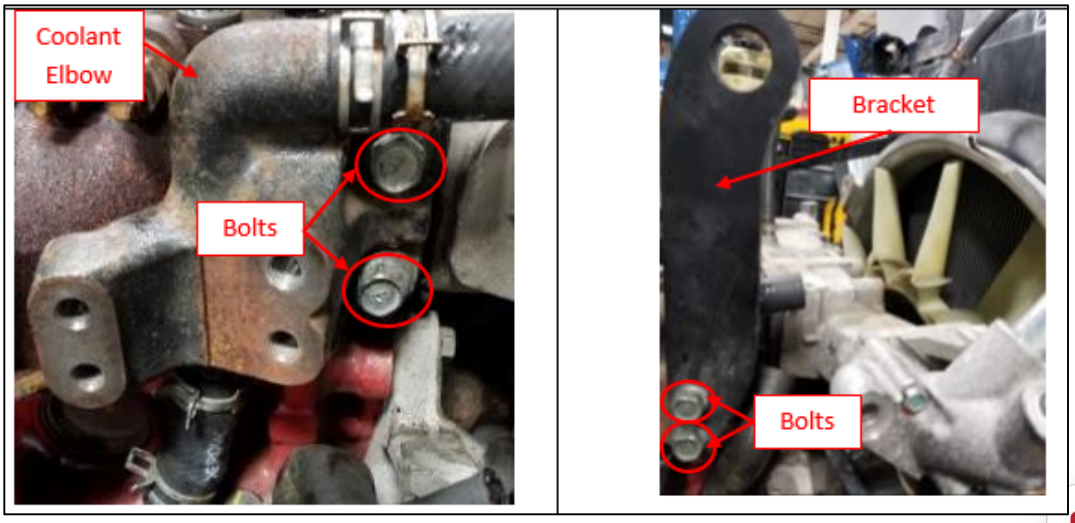
37. Connect the left CAC hose. Tighten the 4 clamps securing the left CAC hose to the specified torque.

Specified Torque: 4 lb-ft (6 Nm)



38. Install the 2 bolts securing the coolant elbow to the cylinder head. Install the 2 bolts securing the lifting hook bracket. Tighten to the specified torque.

Specified Torque: 92 lb-ft (125 Nm)



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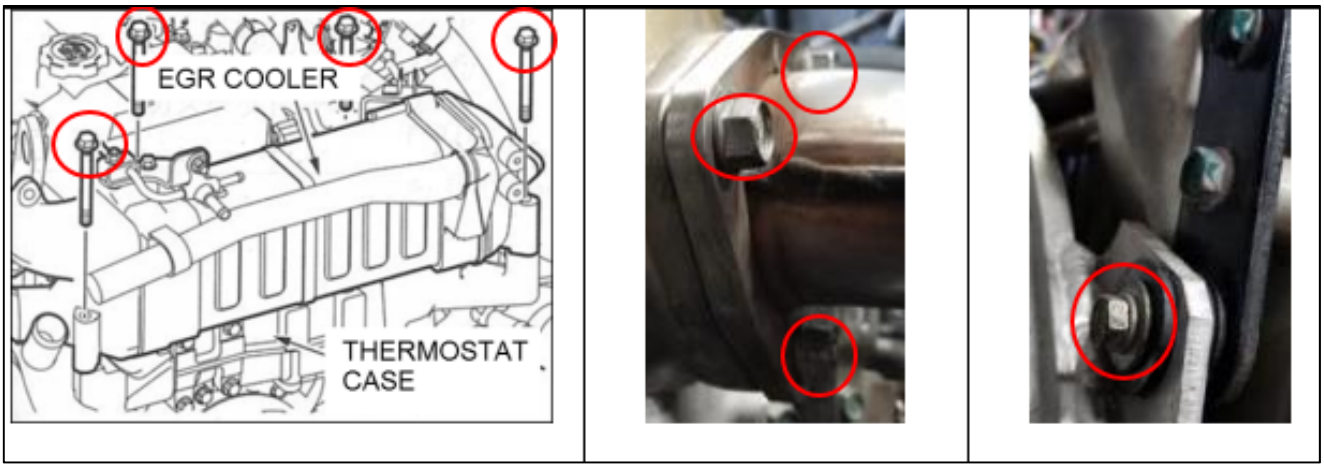
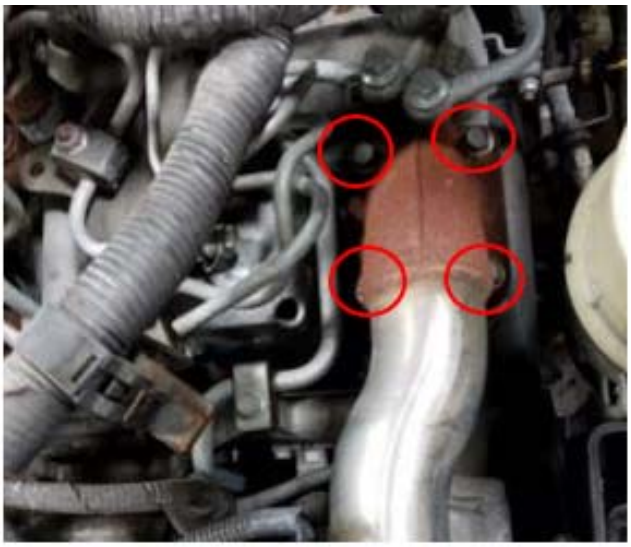
39. Insert the EGR cooler into the 2 coolant hoses on the passenger side of the vehicle. Install the EGR cooler bolts. Install the EGR pipe bolts into the EGR cooler using a new gasket. Install and tighten the bolt going through the fan shroud into the EGR cooler bracket and tighten all bolts to the specified torque.

Specified Torque (EGR Cooler): 27 lb-ft (37Nm)
Specified Torque (EGR Pipe): 41 lb-ft (55 Nm)
Specified Torque (Shroud Bolt): 15 lb-ft (20 Nm)



40. Tighten the 4 bolts attaching the EGR pipe to the EGR valve to the specified torque.

Specified Torque: 41 lb-ft (55Nm)



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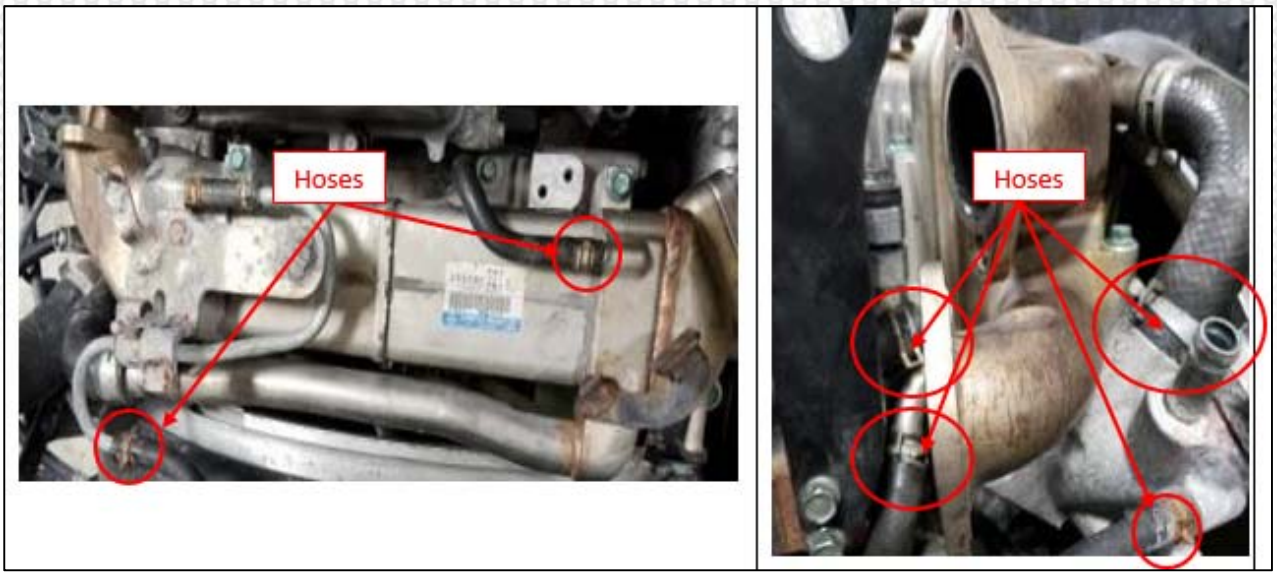
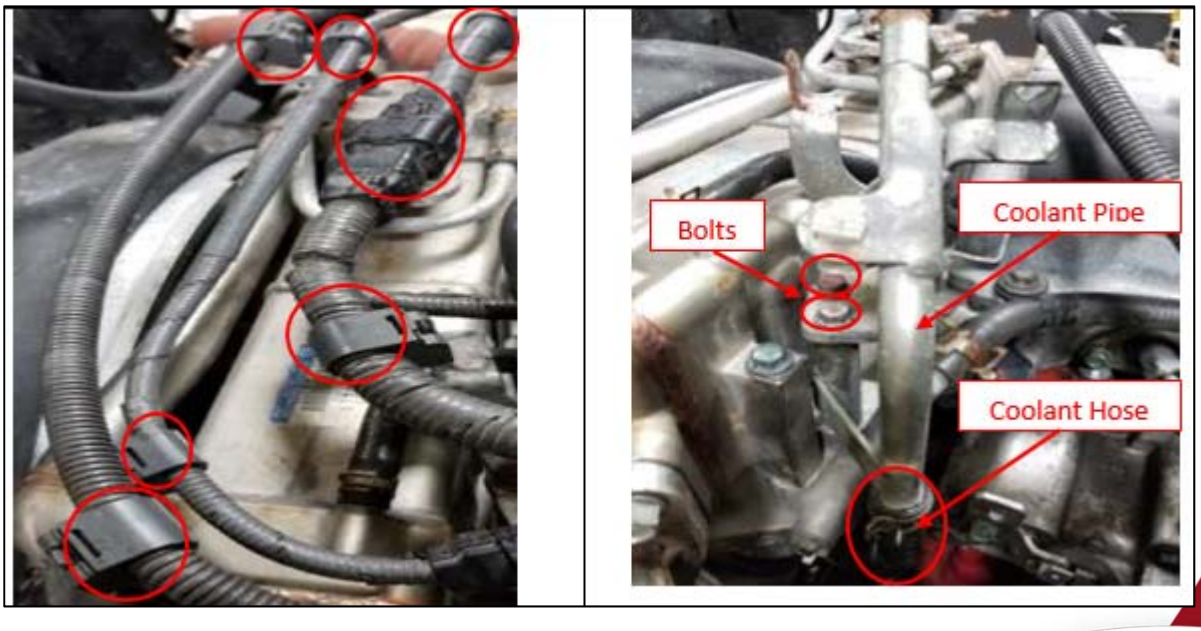
41. Connect the 6 coolant hoses to the EGR cooler.



42. Connect the coolant hose to the coolant pipe. Install the 2 bolts securing the coolant pipe to the thermostat housing and tighten to the specified torque. Connect the wiring harnesses clipped to the top of the EGR cooler and coolant pipe.

Specified Torque: 21 lb-ft (28.5 Nm)



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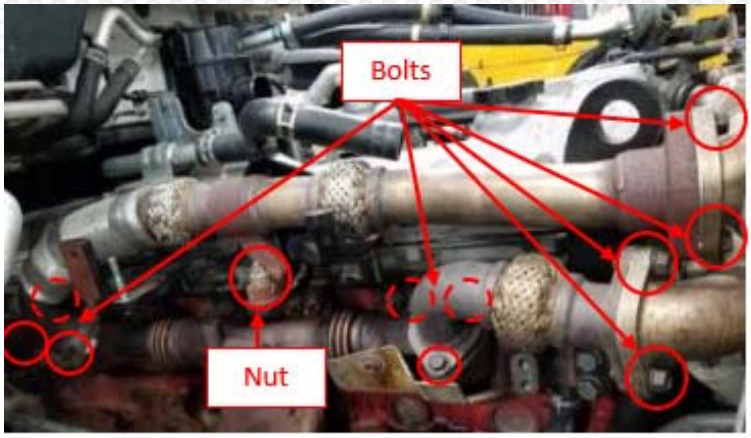
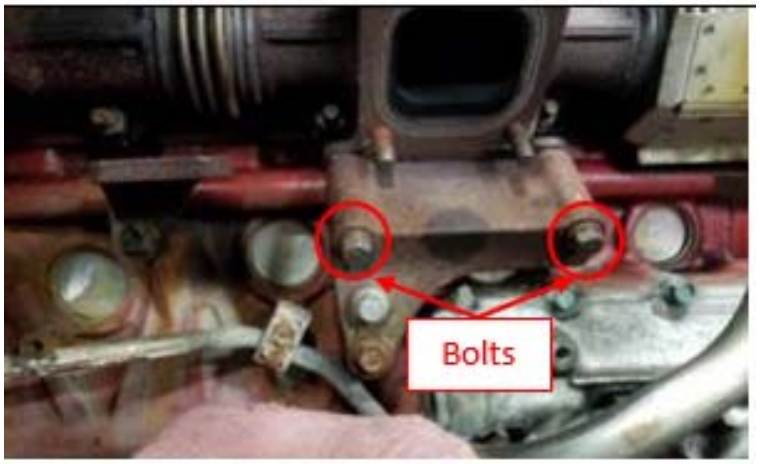
43. Install the 2 EGR pipes using new gaskets. Install the 10 bolts and 1 nut securing the EGR pipes and tighten to the specified torque.

Specified Torque
(Pipe to Manifold): 50 lb-ft (69 Nm)
(Pipe to EGR): 41-lb-ft (55 Nm)



44. Install the 2 bolts securing the exhaust manifold to the bracket and tighten to the specified torque.

Specified Torque: 50 lb-ft (69 Nm)



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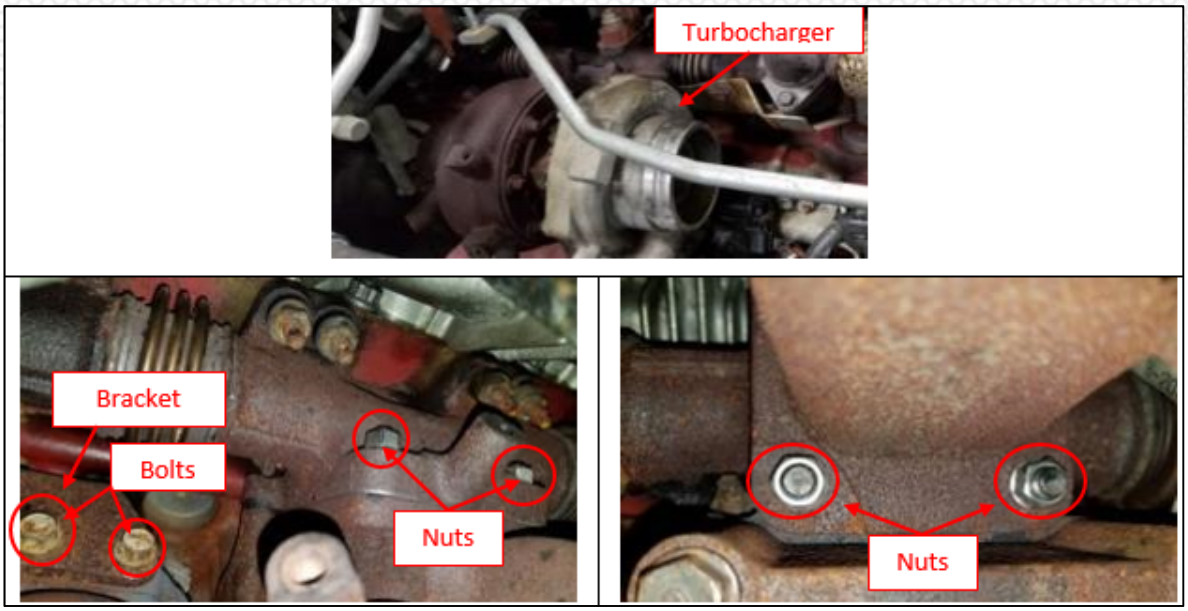
45. Install the turbocharger to the exhaust manifold using a new gasket. Install 4 new nuts and tighten to the specified torque. Install the 2 bracket bolts.

Specified Torque (Bolts and Nuts): 55 lb-ft (75 Nm)



46. Install the 2 bolts above the exhaust brake that secure the down pipe. Install 4 new nuts on the down pipe and tighten to the specified torque.

Specified Torque (Down Pipe): 35 lb-ft (47 Nm)
Specified Torque (Exhaust Bracket): 21 lb-ft (28.5 Nm)

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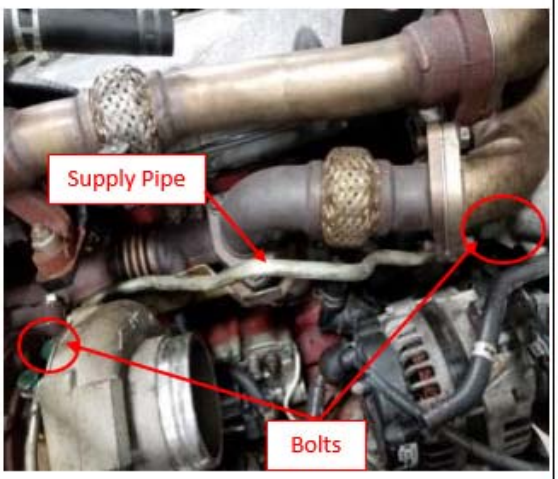
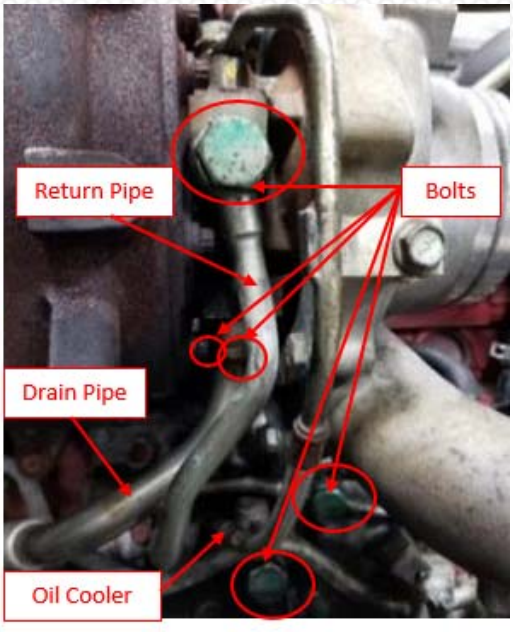
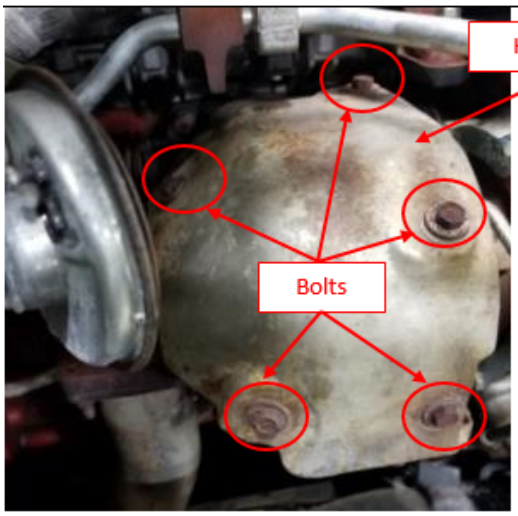
47. Install the 2 banjo bolts on the turbo coolant supply pipe using new soft washers. Install the coolant return banjo bolt into the turbo using new soft washers. Install the banjo bolt in the oil feed line and the coolant return line at the oil cooler using new soft washers. Using a new gasket, install the 2 bolts securing the oil drain pipe to the turbo. Tighten to the specified torque.
Specified Torque (Banjo Bolts): 18 lb-ft (25 Nm)
Specified Torque (Drain Pipe): 21 lb-ft (28.5 Nm)

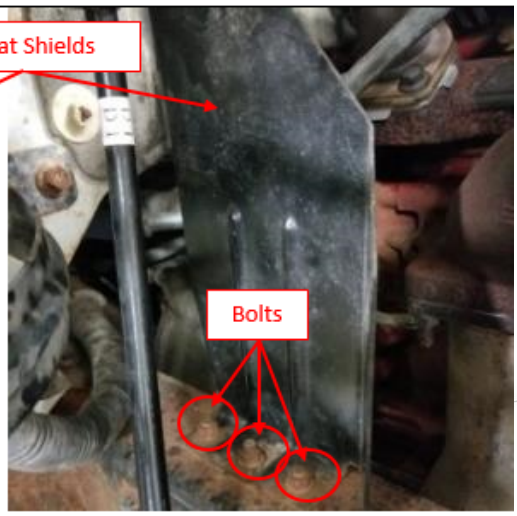




48. Install the 8 bolts securing the 2 turbo heat shields. Install the 3 nuts on the frame mounted heat shield.

Specified Torque (Nuts and Bolts): 21 lb-ft (28 Nm)





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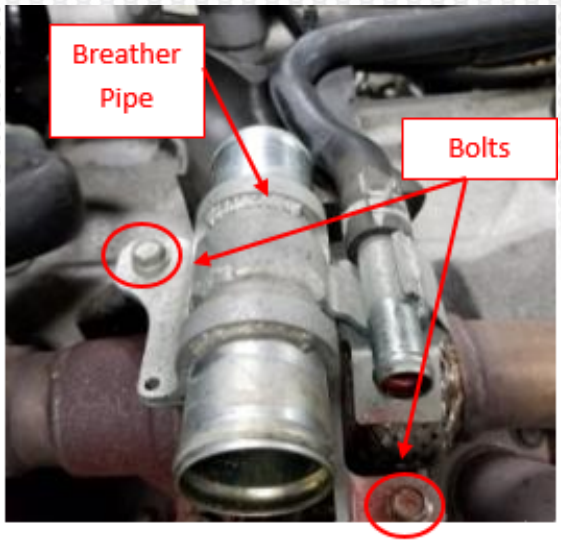
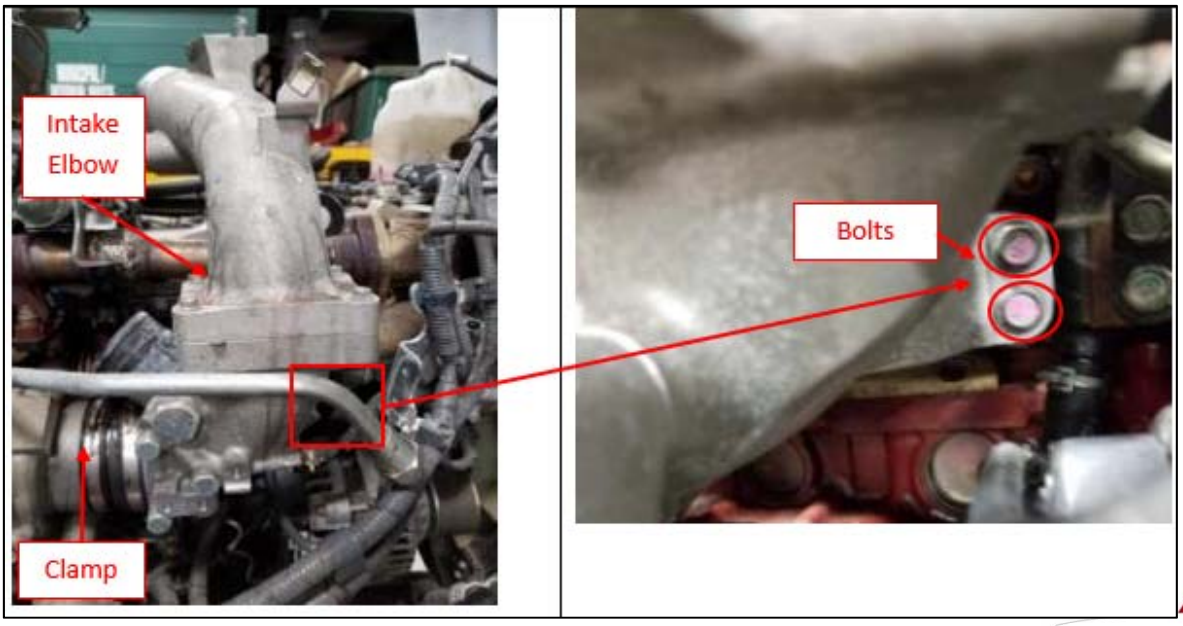
49. Install the 2 bolts securing the breather pipe tube.

Specified Torque: 21 lb-ft (28 Nm)



50. Install the intake elbow on the turbo. Install the hose clamp securing the intake elbow to the turbo. Install the 2 bolts securing the intake elbow to the engine.

Specified Torque (Clamp): 4 lb-ft (6 Nm) **Specified Torque (Bolts):** 21 lb-ft (28 Nm)



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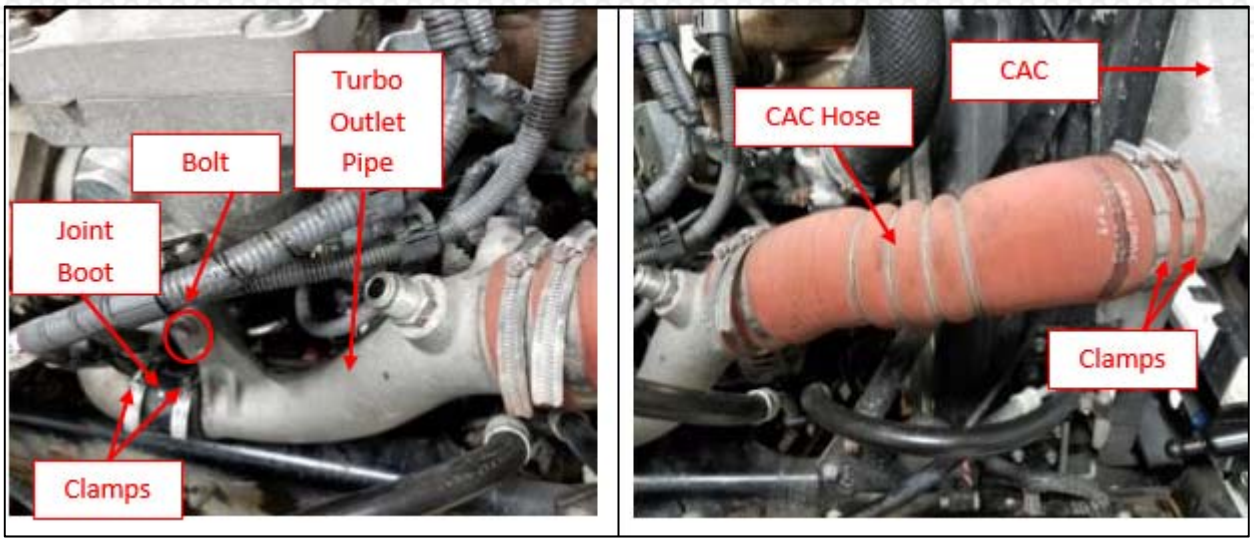
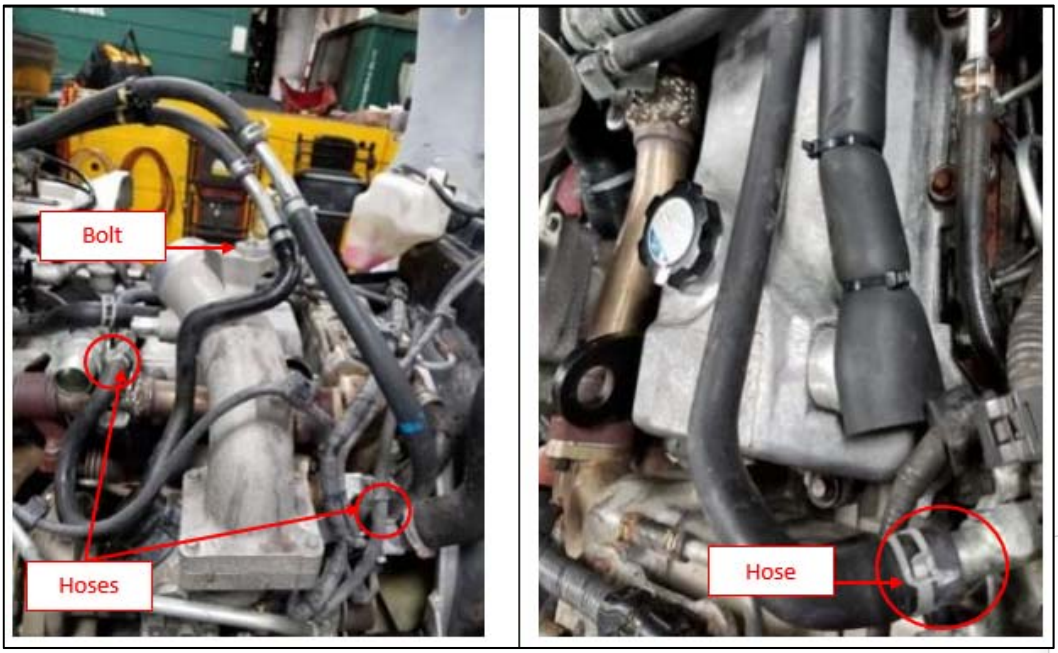
51. Install a new joint boot with new clamps between the turbo outlet and the outlet pipe to the CAC. Connect the CAC hose to the CAC. Install the bolt securing the outlet pipe to the intake elbow and tighten to the specified torque. Tighten the 4 hose clamps to the specified torque.

Specified Torque (Bolts): 21 lb-ft (28 Nm) **Specified Torque (Clamp):** 4 lb-ft (6 Nm)



52. Connect the 3 heater hose connections. Connect the bolt securing the heater hose bracket to the upper intake pipe and tighten to the specified torque.

Specified Torque: 21 lb-ft (28 Nm)



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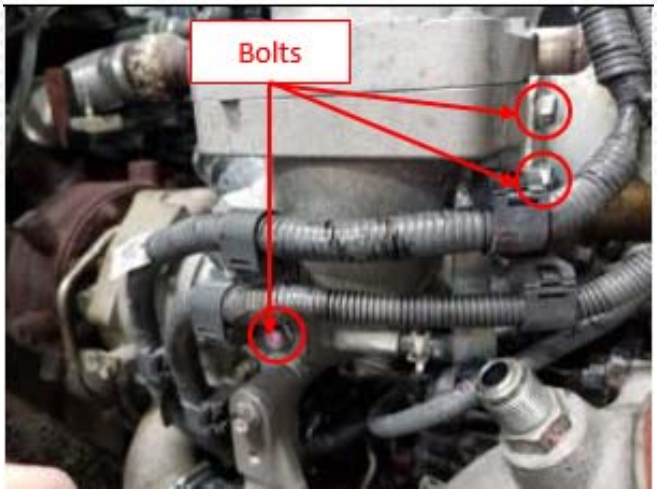
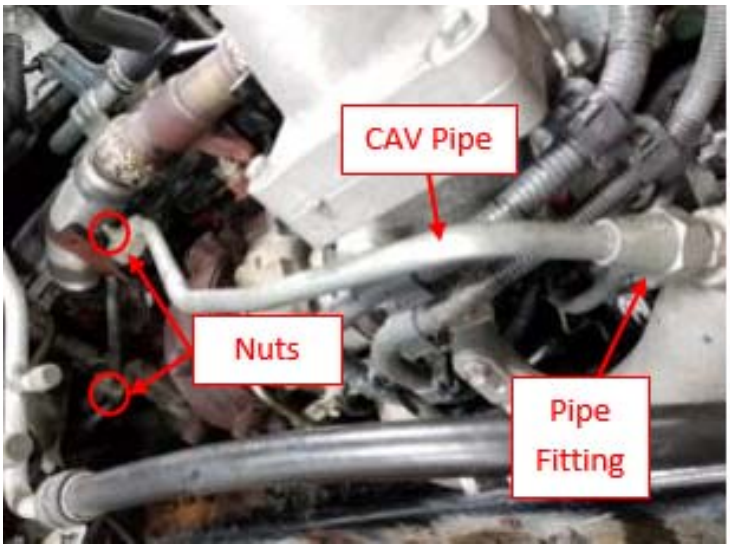
53. Install the 3 bolts securing the wire harnesses to the intake pipe and tighten to the specified torque.

Specified Torque: 21 lb-ft (28.5 Nm)



54. Install the 2 nuts/clamps that secure the CAV pipe. Install the CAV pipe fitting. Tighten to the specified torque.

Specified Torque (Clamp Nuts): 4 lb-ft (6 Nm)
Specified Torque (CAV Pipe): 41 lb-ft (55 Nm)



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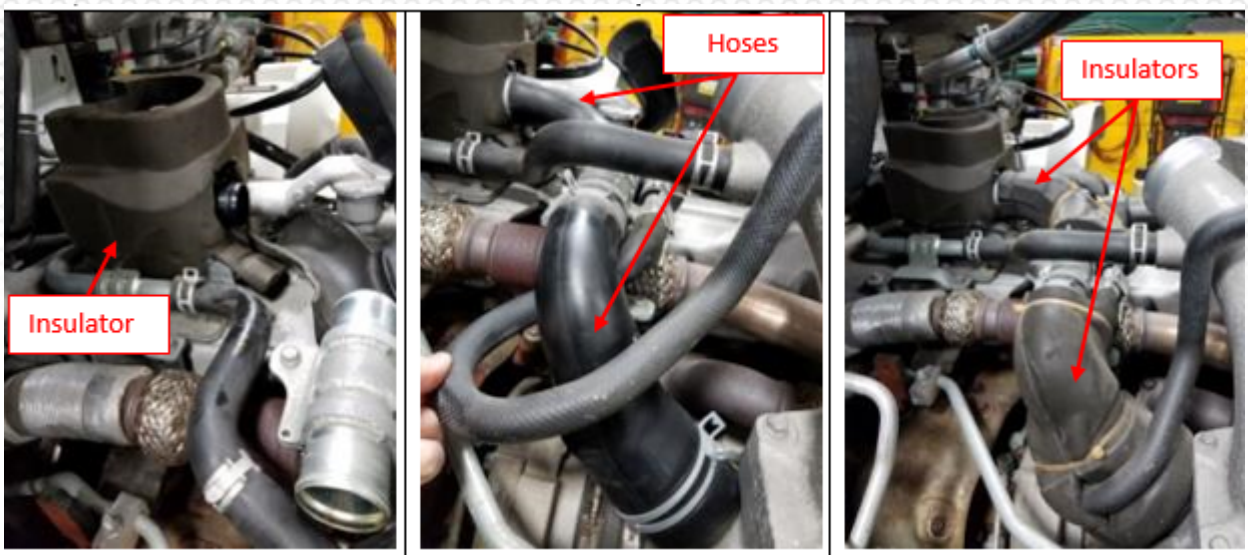
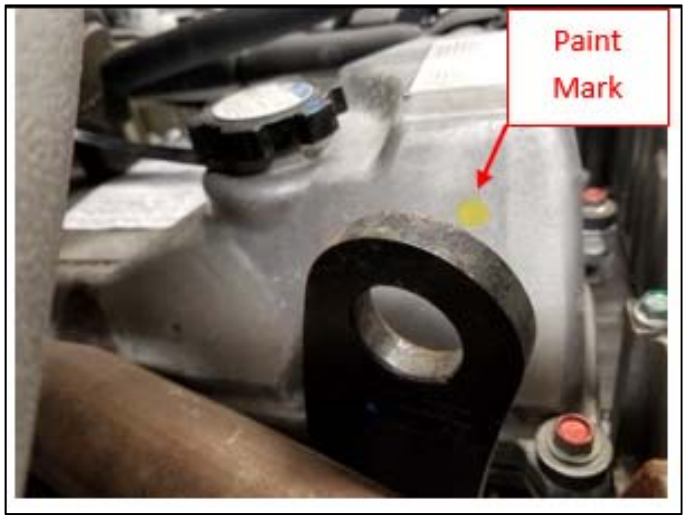
55. Install the crankcase ventilation breather hoses. If applicable, install the insulators over the hoses, and secure the insulators with new tie straps.



56. Apply a yellow paint mark to the front of the valve cover to indicate that this safety recall was performed.



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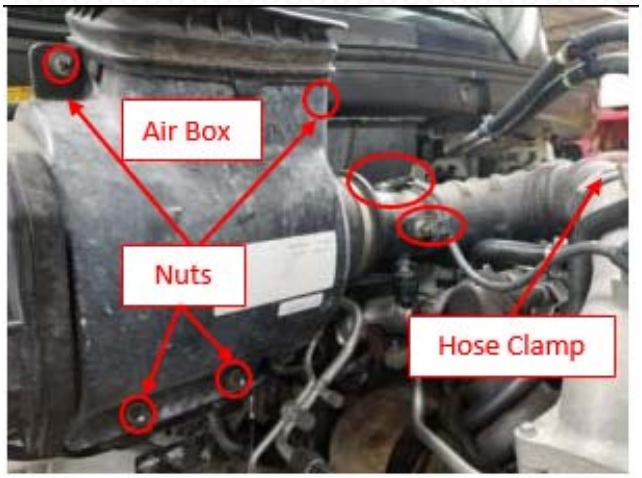
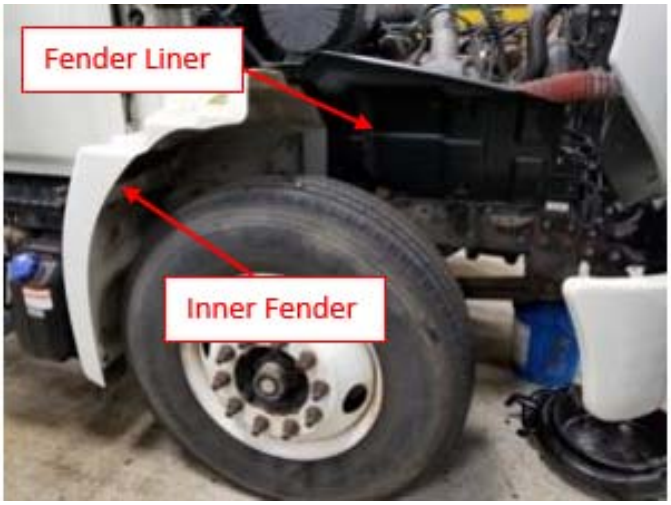
57. Place the air box on the air box bracket. Install the 4 nuts securing the air cleaner box to the bracket and tighten to the specified torque. Install the air intake hose connected to the intake elbow and tighten the clamp to the specified torque. Connect the mass airflow sensor connector and harness clip.

Specified Torque (Air Box): 4 lb-ft (6 Nm)
Specified Torque (Clamp): 4 lb-ft (6 Nm)



58. Install the 6 bolts and 1 nut securing the passenger side inner fender. Install the 4 bolts and 1 nut securing the fender liner and tighten to the specified torque.

Specified Torque: 10 lb-ft (13.5 Nm)



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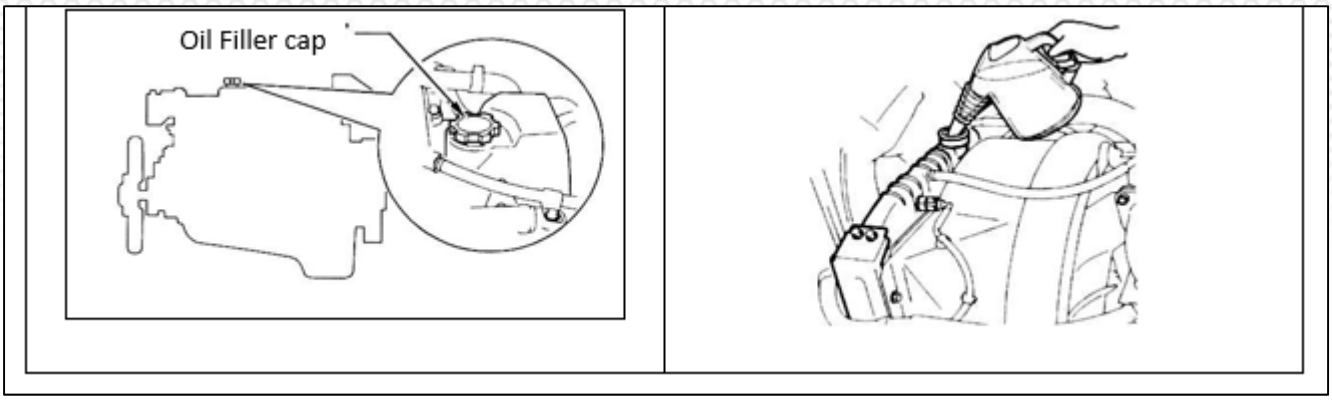
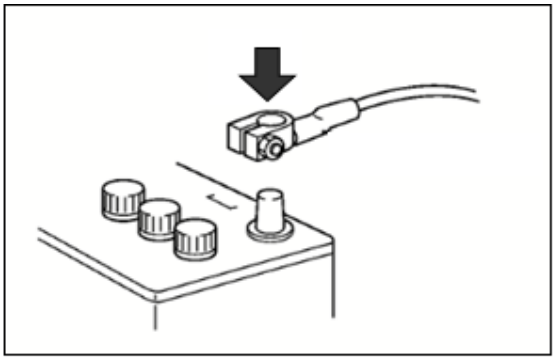
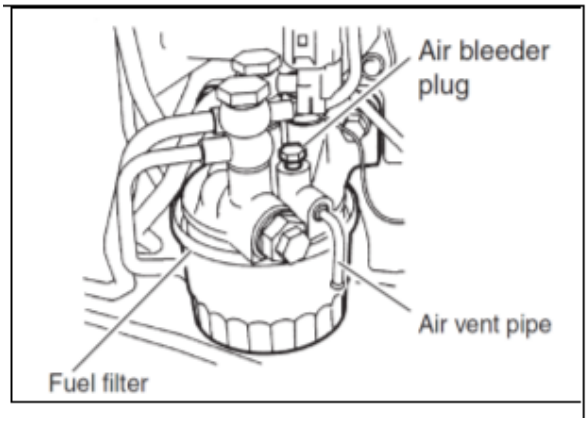
59. Fill the engine with new Hino Genuine engine oil. Ensure all coolant hoses and drain plugs are installed. Fill the cooling system with the coolant that was previously removed from the engine. Purge air from the cooling system by squeezing the upper radiator hose while filling.



60. Connect the negative battery terminal.



61. Open the air bleeder plug on the bubbler (fuel filter). Have an assistant crank the engine until fuel runs out of the air vent pipe. Close the air bleeder plug. Crank the engine for 15 seconds at a time, allowing a 30 second break with the ignition in the “ACC” position between each cranking interval. The engine should start within 3-4 cranking intervals. If not, open the air bleeder plug again and very fuel flows from the air vent pipe while cranking. Close the air bleeder plug and try to start the engine again.



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62. With the engine running, inspect for any abnormal noises, oil leaks, or coolant leaks, and address as necessary. Verify that no warning lamps are illuminated and no DTC's (Diagnostic Trouble Codes) are present. Verify that the coolant level is still full after running the engine then allowing it to cool off. The engine oil should be at the full mark on the dipstick. If no issues are seen, close the hood and road test the vehicle to verify normal operation. If normal operation has been verified, proceed to the Final Inspection procedure, below.

FINAL INSPECTION:

1. To complete this safety recall, review and confirm the following:
- The hex head inspection plug has been tightened to the specified torque.
- If connecting rods were replaced, ensure all repairs were performed in accordance with this repair procedure and nuts and bolts have been tightened to their specified torque.
- No leaks are present; engine oil and coolant levels are full.
- The engine runs properly with no abnormal noises, no warning lamps are illuminated, and no DTC's are present.

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NOTICE: This procedure is intended to address potential premature failure of the connecting rod wrist pin bushings. It **IS NOT** intended to address any non-related or pre-existing worn or failed engine parts such as, but not limited to, main bearings, crankshaft, pistons, cylinder liners, injectors or injector cups, cylinder head components etc.

Should ANY additional Parts or Labor be required over and above the contents of this procedure, a TechAssist case MUST be created for preapproval of the additional requested Parts and/or Labor.

CLAIM APPLICATION:
Reimbursable in accordance within the terms and policies of the Hino limited warranties.

Rod Serial Number Inspection:

a) Recall No: AA860
b) Labor charge based on the following table:

Inspection Only	0.3 hr.
Connecting Rod Replacement	30.0 hr.

c) Warranty code: 02312
d) Trouble code: 98
e) Operation code: 02350AOT
f) Original failed part: 9999999999

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