INSTALLATION MANUAL

Garrett
ADVANCING MOTION

POWERMAX

Direct-Fit Turbocharger Kit For The

2021+ Ford Bronco 2.7L

WARNING

Before raising the vehicle on a hoist, make sure the hoist capacity is adequate for the vehicle weight, including any vehicle cargo or modifications. Always position the hoist lift arms as shown in section 100-02 of this manual. Do not use the engine to power the drive wheels unless all drive wheels are elevated off the ground. Incorrect hoist arm positioning or drive wheels in contact with the ground can cause unintended vehicle movement. Failure to follow these instructions may result in serious personal injury or death.

WARNING

Only raise the vehicle when positioned on a hard, level surface. Attempting to raise the vehicle on an uneven or soft surface may result in vehicle slipping or falling from the jack or jackstand. Failure to follow this instruction may result in serious personal injury.

WARNING

When jacking or lifting the vehicle, block all wheels remaining on the ground. Set the parking brake if the rear wheels will remain on the ground. These actions help prevent unintended vehicle movement. Failure to follow these instructions may result in serious personal injury.

NOTICE

The jack provided with the vehicle is intended to be used in an emergency for changing a deflated tire. To avoid damage to the vehicle, never use the jack to hoist the vehicle for any other purpose.

Do not attempt to jacking on the front bumper or the rear bumper on any vehicle. Damage to bumper covers will occur.

Do not attempt to jacking on the front control arm or rear control arm on any vehicle. Damage to control arms may occur.

Do not use the differential housing as a lift point. Leaks or damage to the rear axle cover and adjoining differential housing surface may occur if a floor jack or any lifting device is allowed to contact the cover at any point where the cover joins the housing.

Place blocks underneath the lifting points if a two-column hoist is used.

Damage to the suspension, exhaust or steering linkage components may occur if care is not exercised when positioning the hoist adapters prior to lifting the vehicle.

To prevent possible damage to the underbody, do not drive the vehicle onto the drive-on lift without first checking for possible interference.

When raising a vehicle on a two-column hoist, use care when positioning the vehicle so that the hoisting forks do not interfere with suspension components, mounting brackets or stabilizer mounting brackets, if equipped. In addition, use care in hoist positioning to avoid possible damage to the axle or rear cover.

JACKING & LIFTING

1. With the vehicle in NEUTRAL, position it on a hoist.

JACKING POINTS

NOTE
4-door shown,
2-door similar.

Only the specified jacking points may be used for jacking and supporting the vehicle.

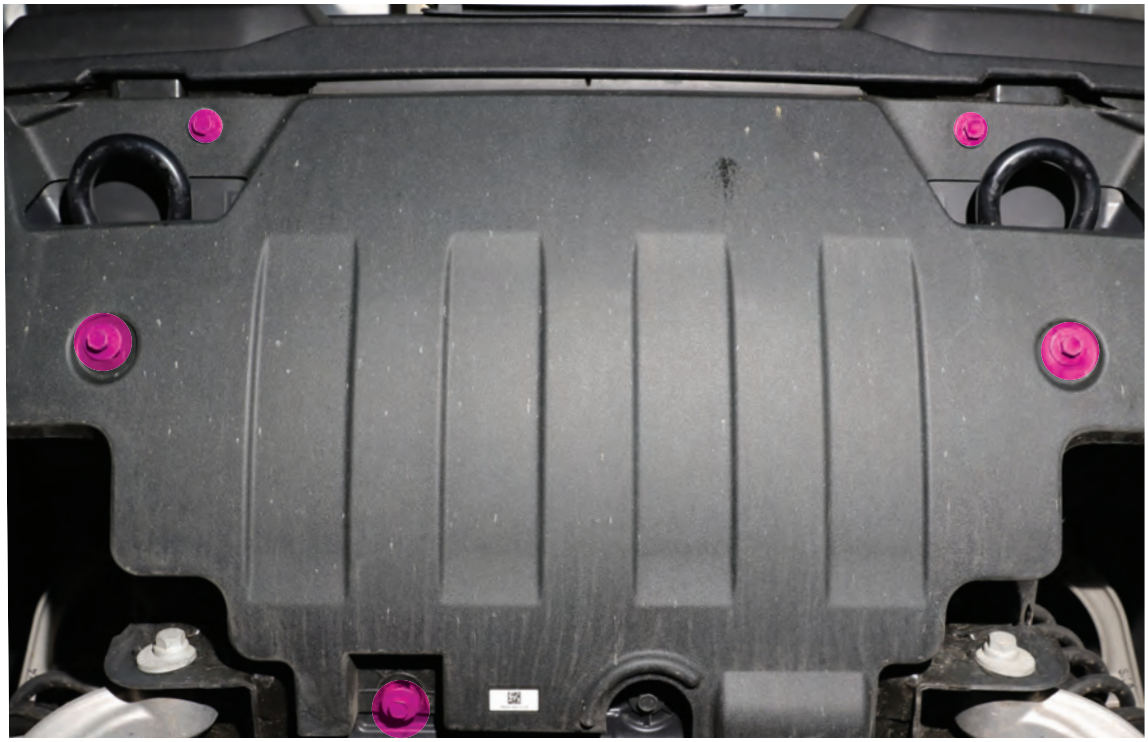
LIFTING POINTS

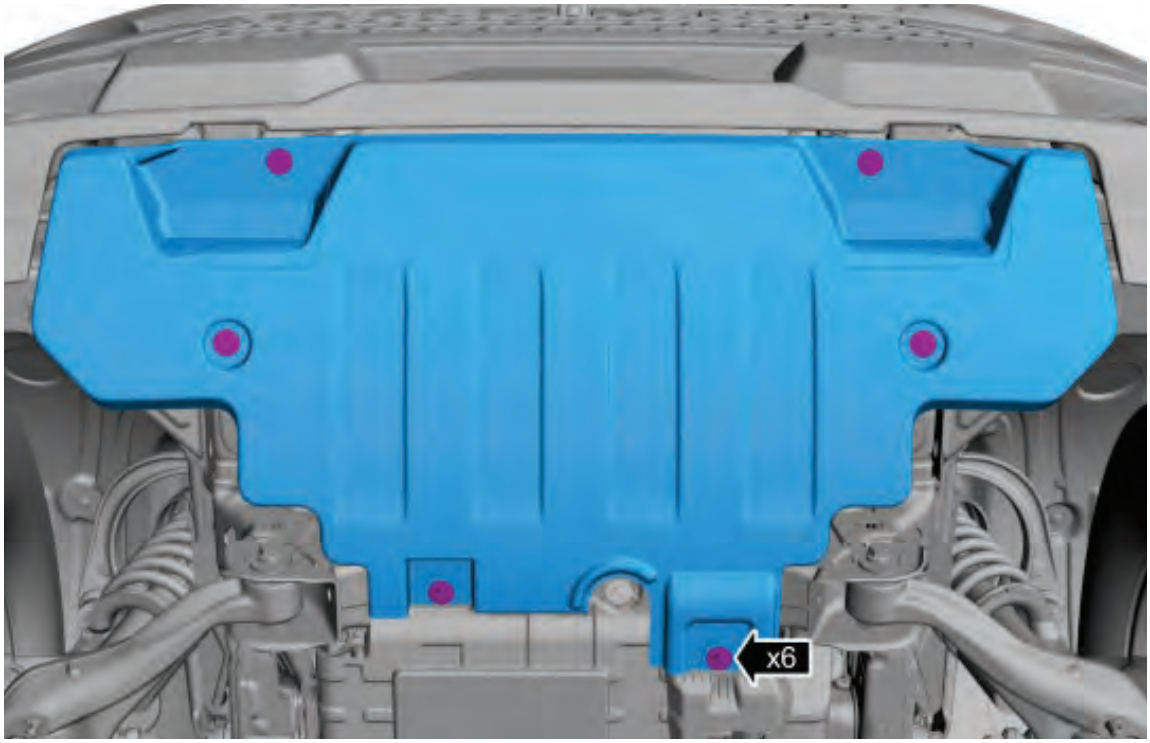
NOTE
RH side shown,
LH side similar.

The lifting points for both the 2 and 4-door variants are aft of the front wheels on the chassis frame as indicated, and fore of the suspension rear trailing arm on the chassis frame.

ENGINE UNDERSHIELD

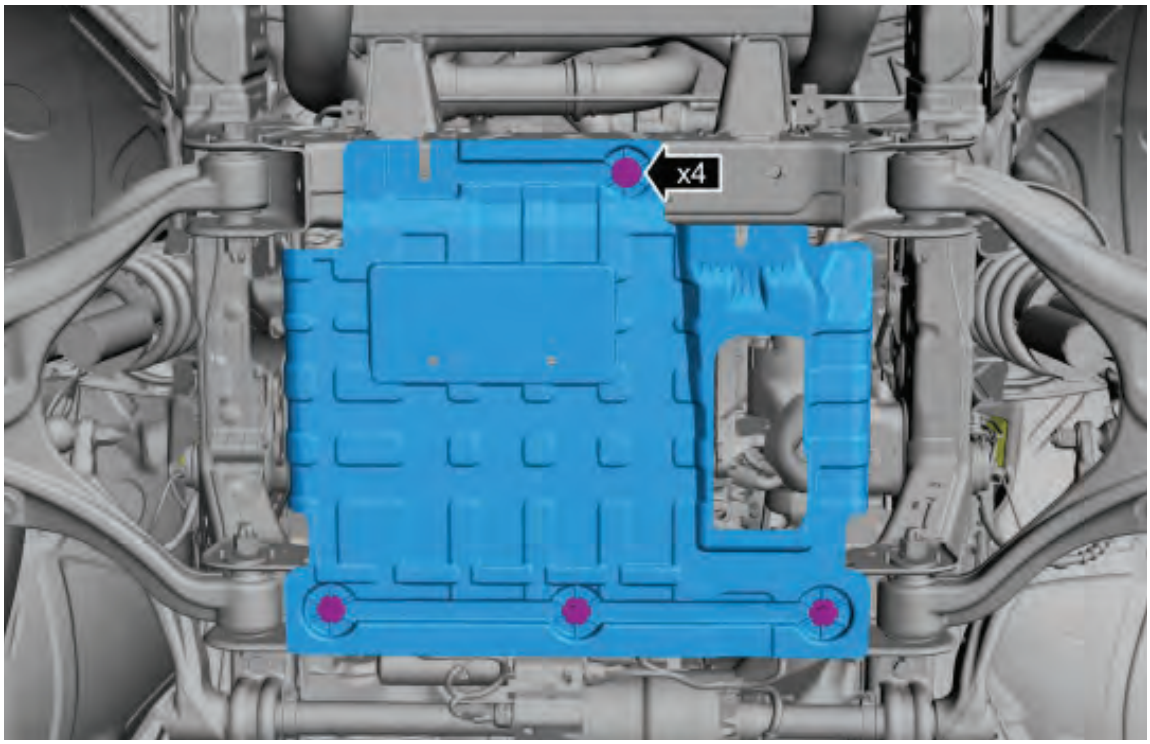
1. Remove the bolts and the engine front undershield.





REAR ENGINE UNDERSHIELD REMOVAL

1. Remove the bolts and the engine rear undershield.



DRAIN THE COOLING SYSTEM

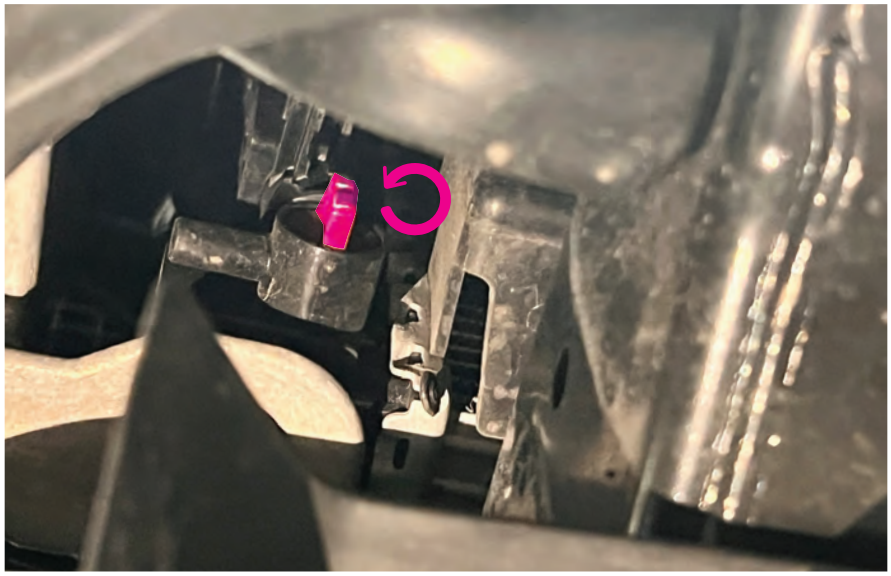
DRAIN THE COOLING SYSTEM

WARNING

When releasing the cooling system pressure, cover the coolant expansion tank cap with a thick cloth.

NOTE Be prepared to collect escaping fluid.

Connect a hose to drain the coolant. Open the radiator drain valve and drain the engine coolant in a suitable, clean container.



NOTICE

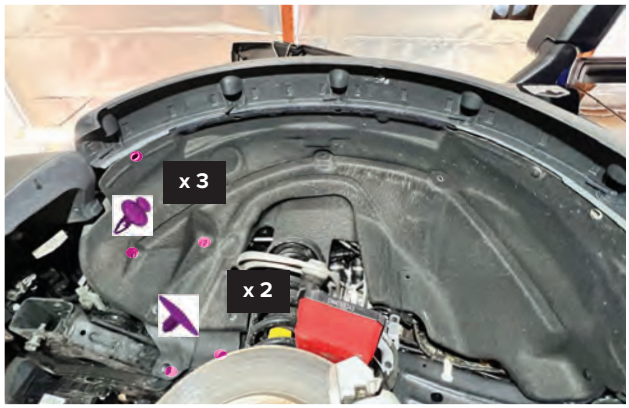
The coolant must be recovered in a suitable, clean container for reuse. If the coolant is contaminated, it must be recycled or disposed of correctly. Using contaminated coolant may result in damage to the engine or cooling system components.

Less than 80% of coolant capacity can be recovered with the engine in the vehicle. Dirty, rusty or contaminated coolant requires replacement.

FRONT FENDER SPLASH SHIELDS

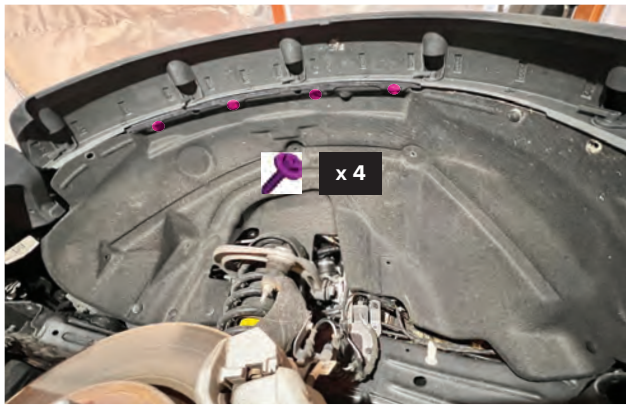
FRONT FENDER SPLASH SHIELDS

1. Remove the wheel and tire.
2. Remove the push pins and pin type retainers.



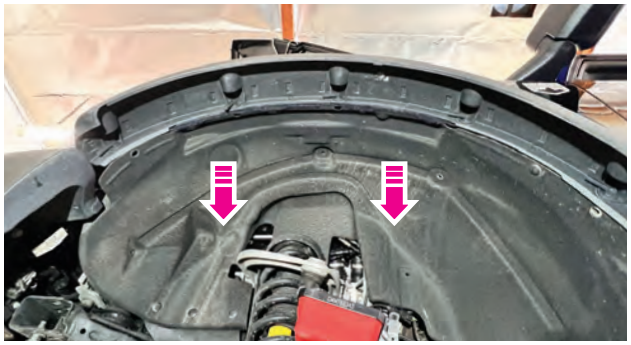
NOTE
LH side shown,
RH side similar.

3. Remove the screws. (7mm)



4. Remove the pint type retainers.

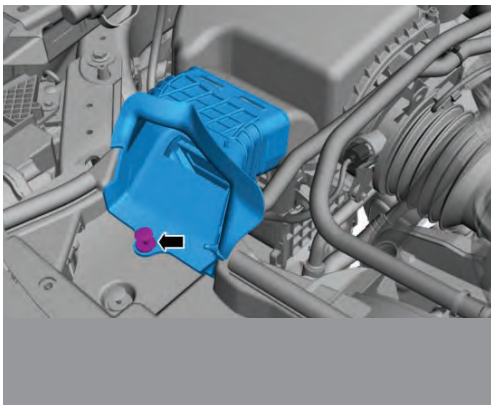
5. Remove the fender splash shield.



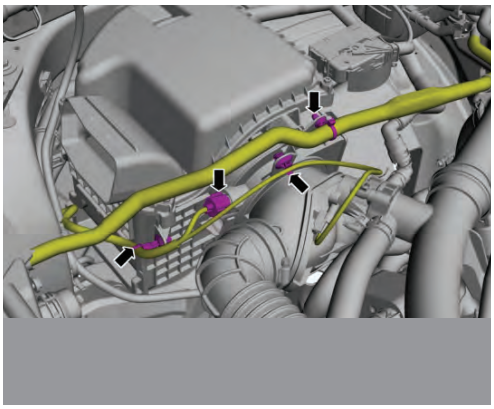
AIR CLEANER

NOTICE
The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.

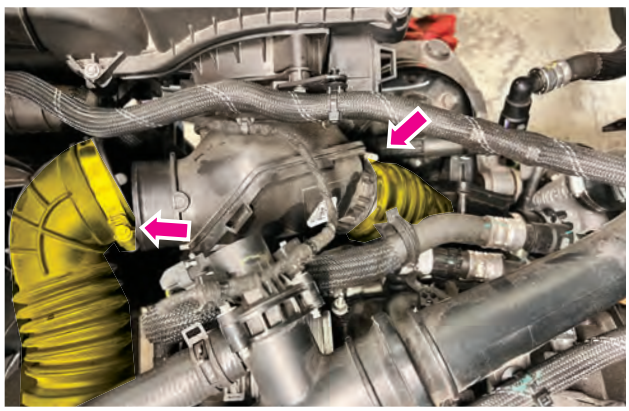
1. Remove the fastener and the air intake duct.

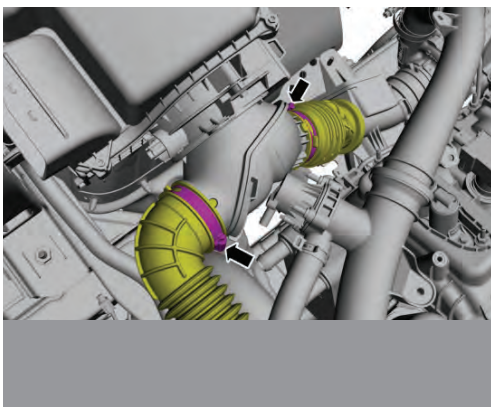


2. Disconnect the electrical connector and detach the retainer clips.

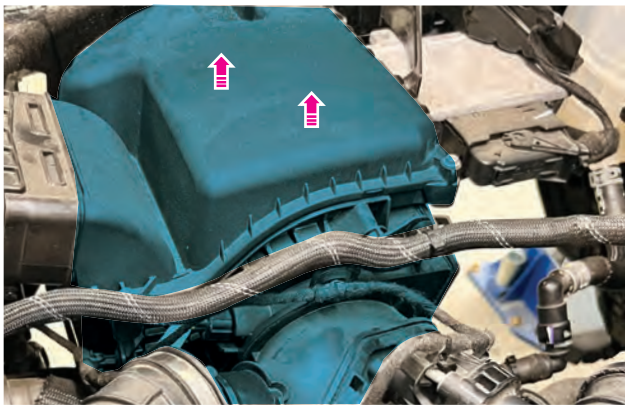


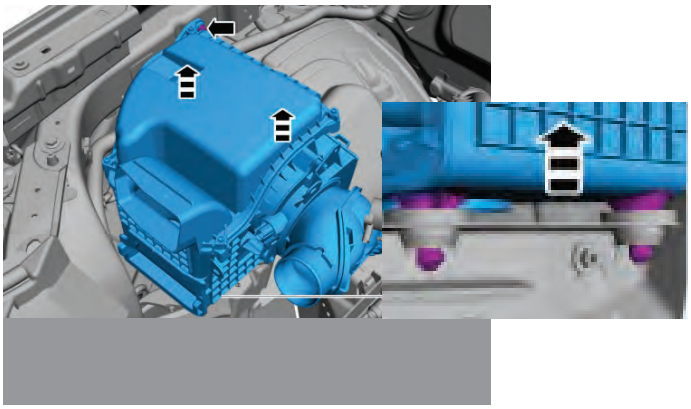
3. Loosen the clamp and position aside the hoses.





4. Remove the bolt and the isolator.

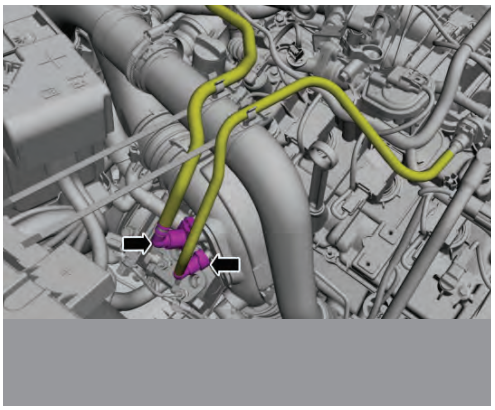




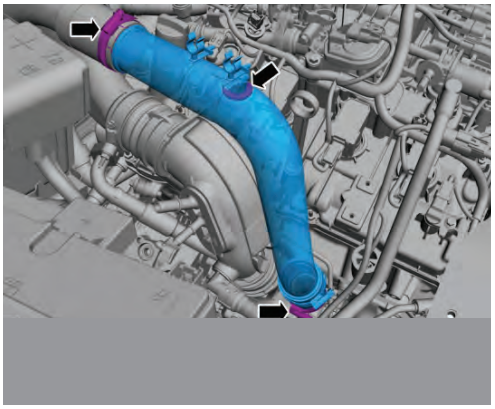
LH TURBOCHARGER OUTLET PIPE REMOVAL

LH TURBOCHARGER OUTLET PIPE REMOVAL

1. Disconnect the quick connectors.



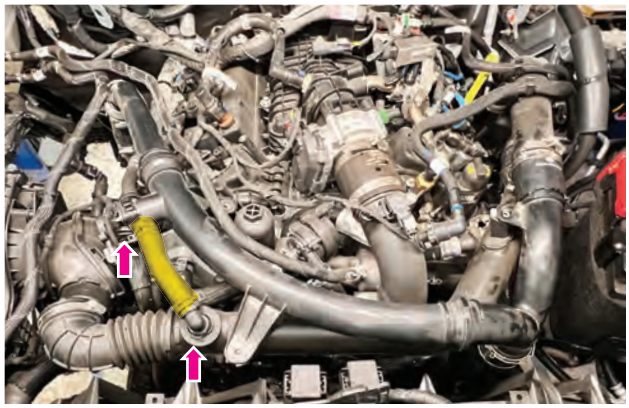
2. Loosen the clamps and detach the grommet. Then remove the pipe.

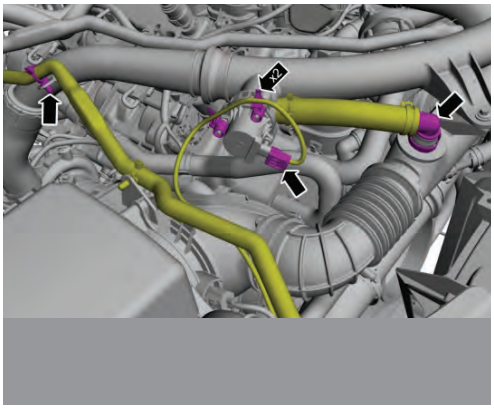


RH TURBOCHARGER OUTLET PIPE REMOVAL

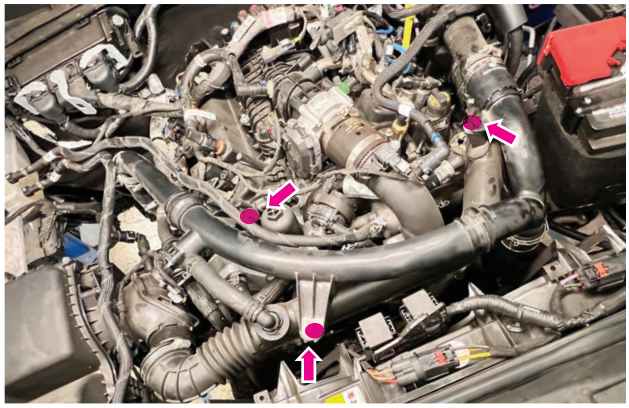
RH TURBOCHARGER OUTLET PIPE REMOVAL

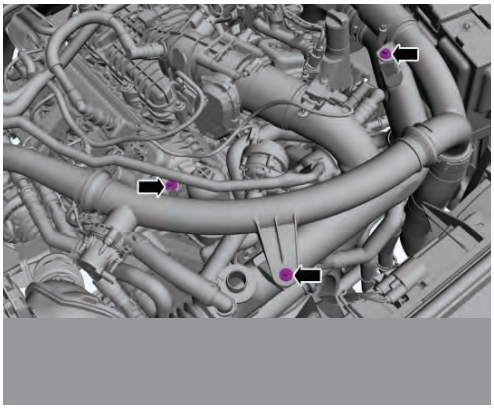
1. Disconnect the electrical connector and detach the retainer clips. Disconnect the quick connector.



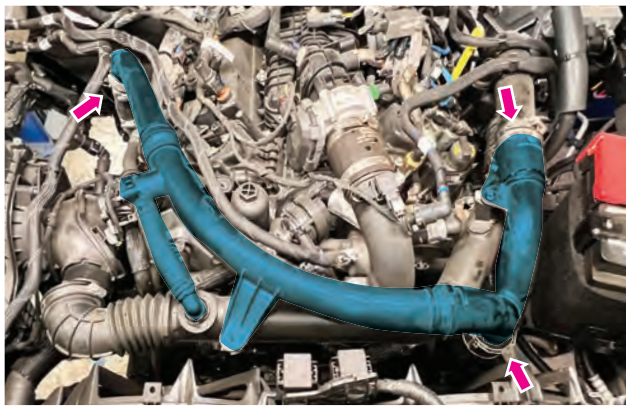


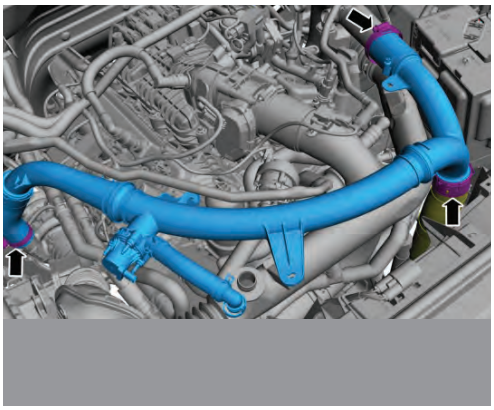
2. Remove the bolts.





3. Loosen the clamps, release the quick connect clip and remove the pipe.



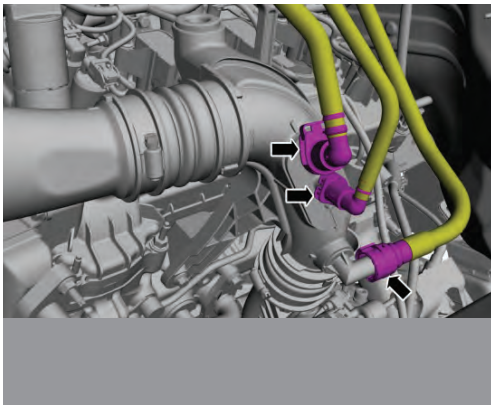


LH AIR CLEANER OUTLET PIPE REMOVAL

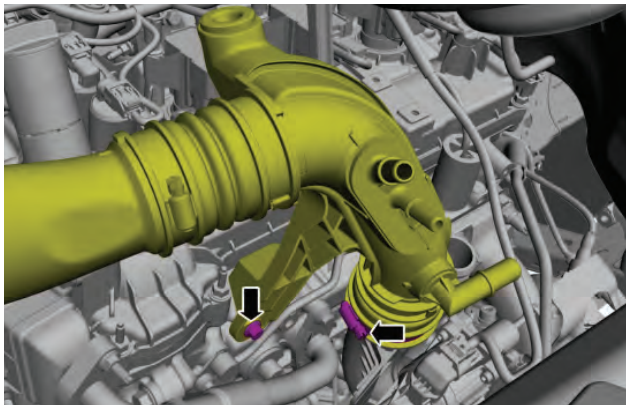
LH AIR CLEANER OUTLET PIPE REMOVAL

NOTICE
The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.

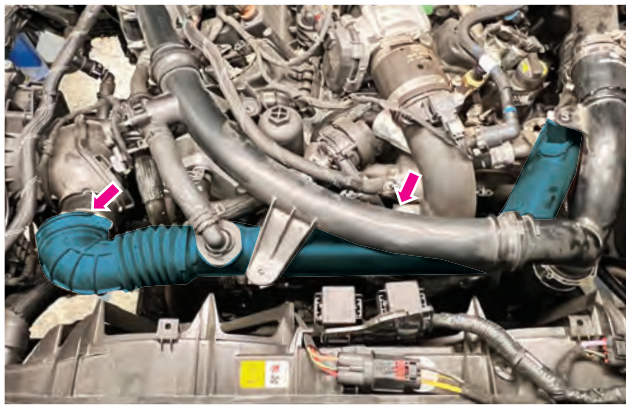
1. Disconnect the quick connectors.

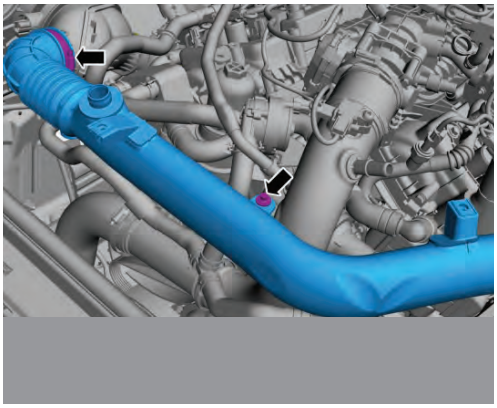


2. Remove the clamp and bolt.



3. Remove the air cleaner outlet pipe by removing the clamp and bolt.

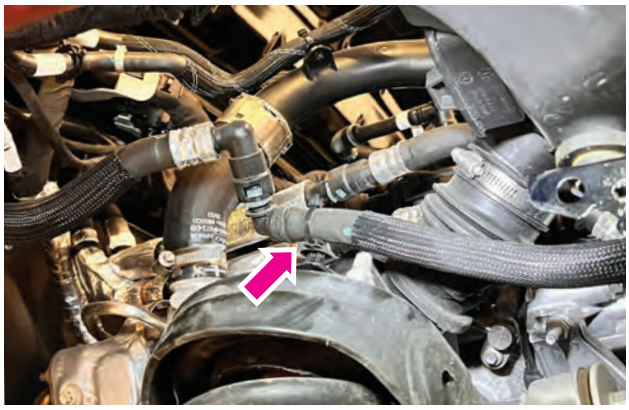


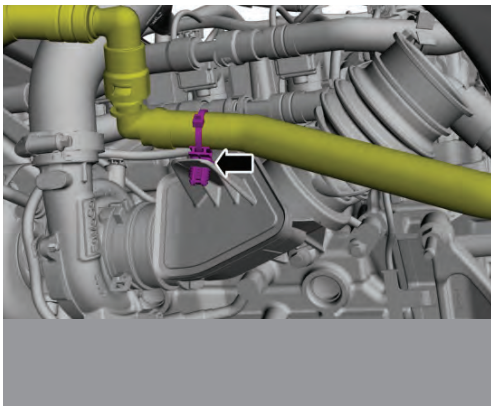


RH AIR CLEANER OUTLET PIPE REMOVAL

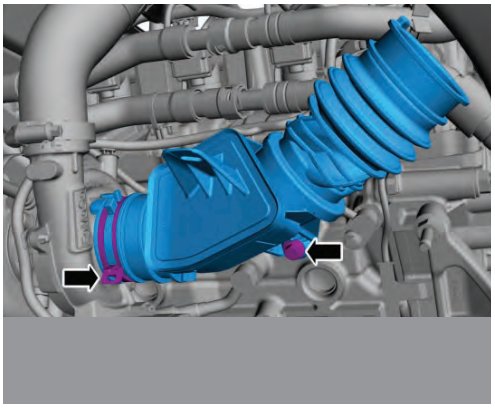
RH AIR CLEANER OUTLET PIPE REMOVAL

1. Detach the coolant hose retainer.





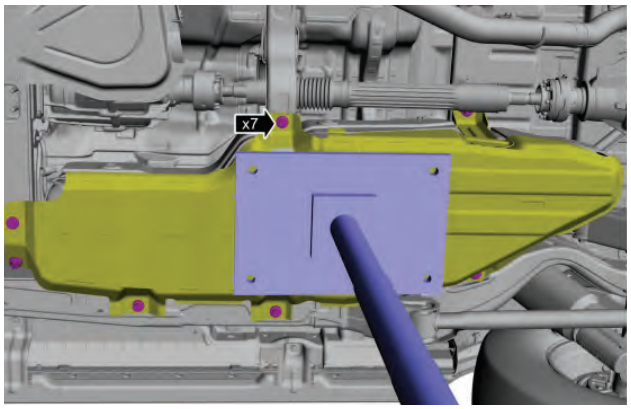
2. Remove the bolt and release the clamp.



TRANSMISSION SUPPORT CROSSMEMBER REMOVAL

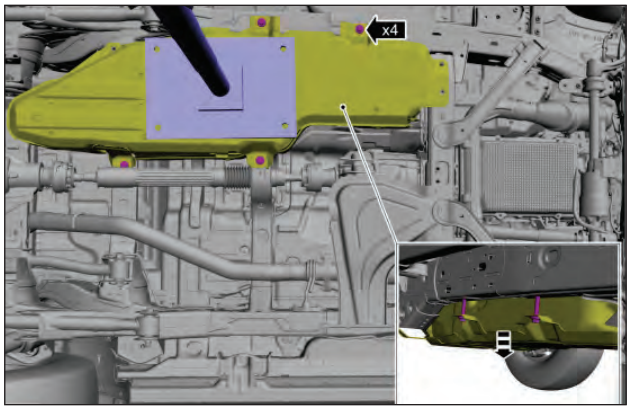
Vehicles with fuel tank shield

1. Support the fuel tank and skid plate with a transmission jack and remove the bolts.



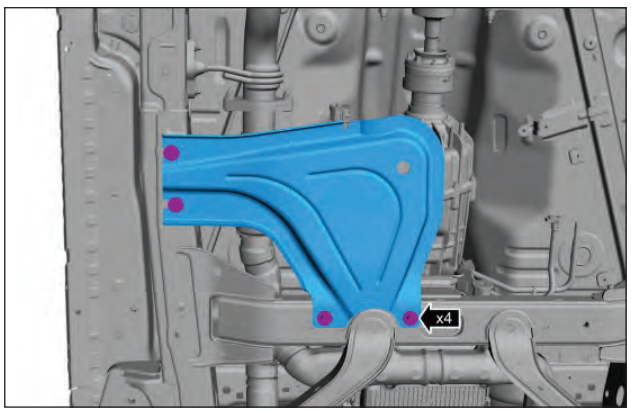
2. Install longer bolts to support the fuel tank and shield. Lower the fuel tank on to the longer bolts and remove the transmission jack.

- Install 4 bolts to support the fuel tank and shield: M12×1.75×110
- Install the bolts to a depth to allow the fuel tank and shield to be lowered approximately 50mm.
- Lower the fuel tank slowly onto the longer bolts and remove the transmission jack.

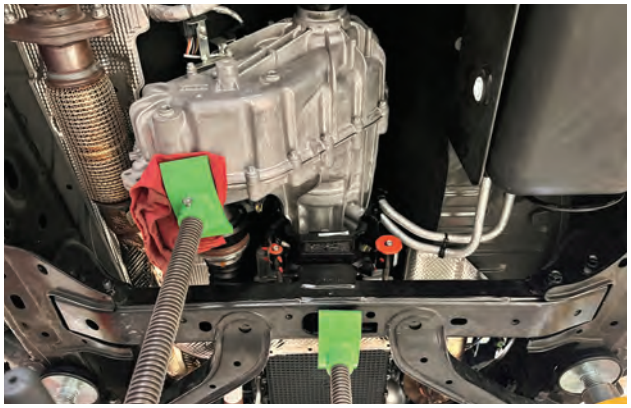


Vehicles without fuel tank shield

3. Remove the bolts and the skid plate.



4. Using a high-lift transmission jack or lift jack stand, support the transmission.

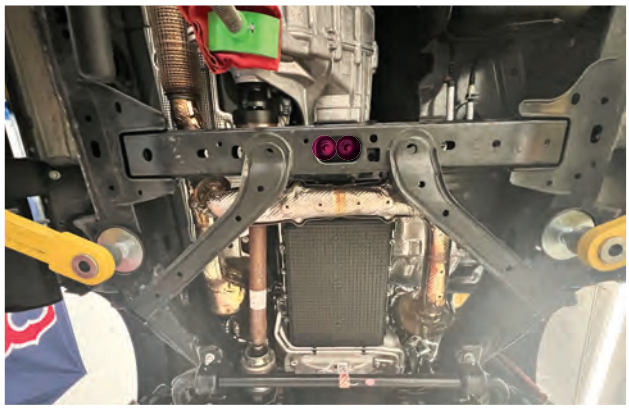


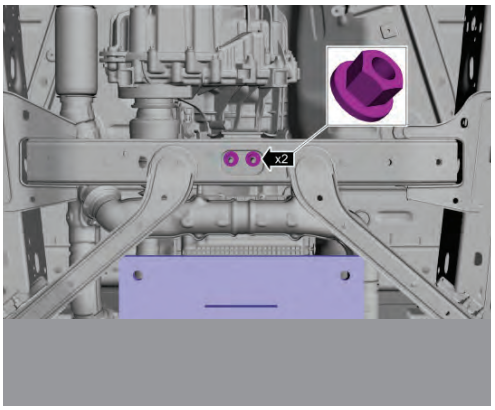
NOTE
Make sure the transmission jack makes contact on the outer ribs of the transmission fluid pan.

WARNING

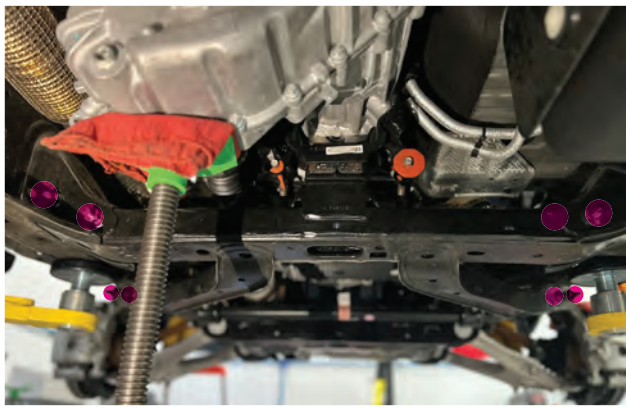
Always secure transmission, transfer case, and axle assemblies to their service jack. Avoid obstructions while lowering and raising the jack. Improperly secured assemblies or contact with obstructions may cause the assembly to fall off the jack, which could result in serious personal injury.

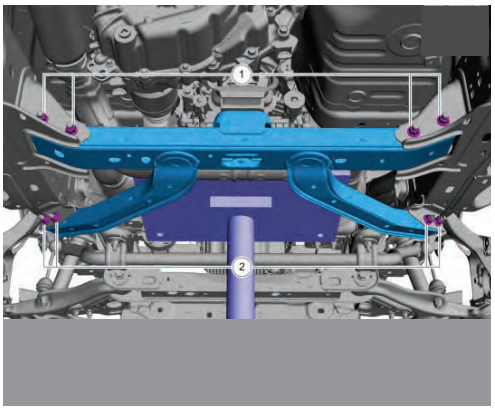
5. Remove the transmission mount nuts from crossmember.





6. Remove the transmission support crossmember nuts and remove the transmission support crossmember.

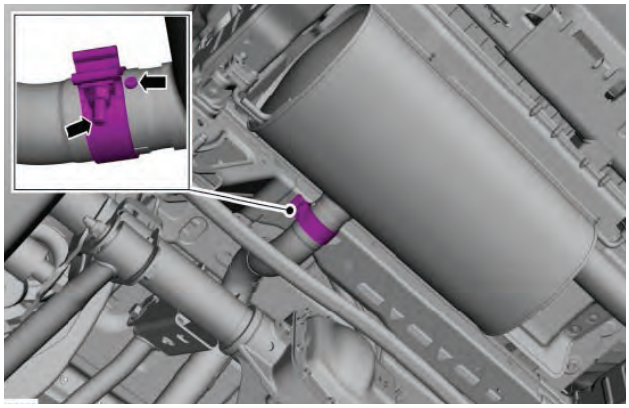




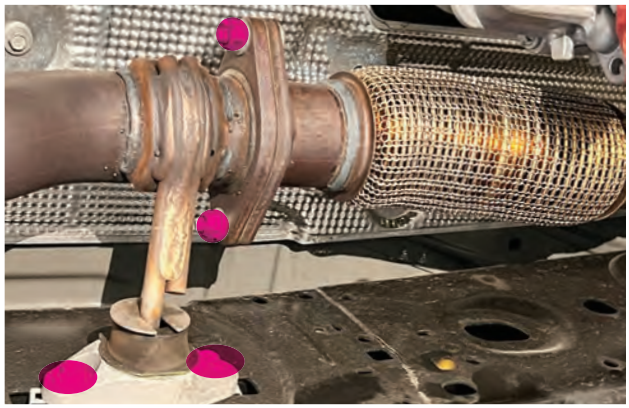
LH CATALYTIC CONVERTER REMOVAL

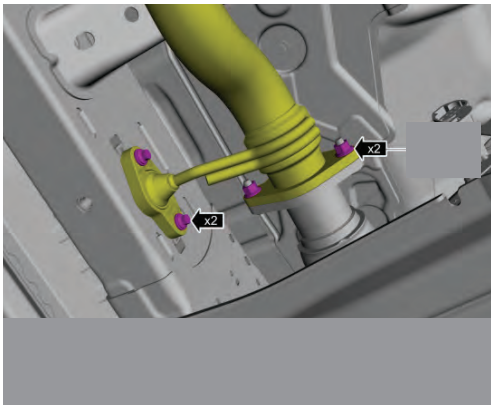
NOTICE
If the catalytic converter is not being replaced, the HO2S and the catalyst monitor sensor do not need to be removed from the catalytic converter. Disconnecting the electrical connectors is still necessary.

1. Loosen the clamp

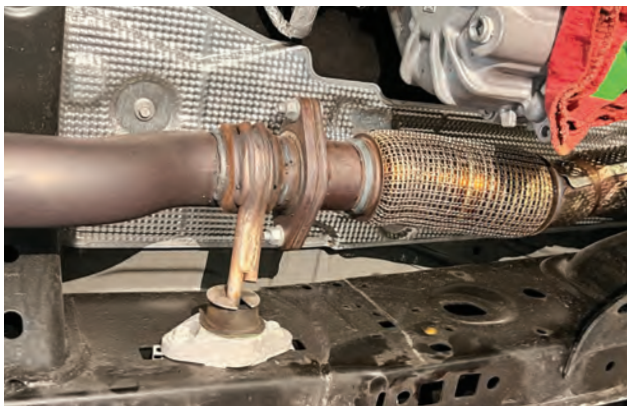


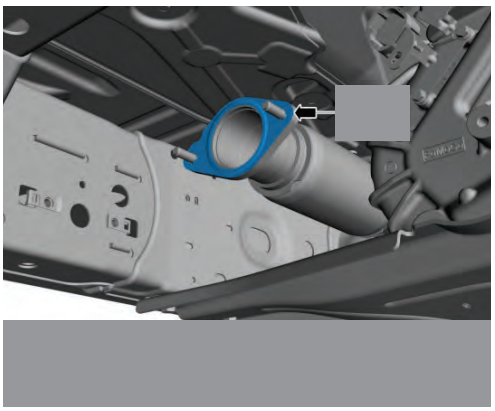
2. Remove the nuts. Retain, inspect, and replace if necessary. Remove the hanger bracket bolts.



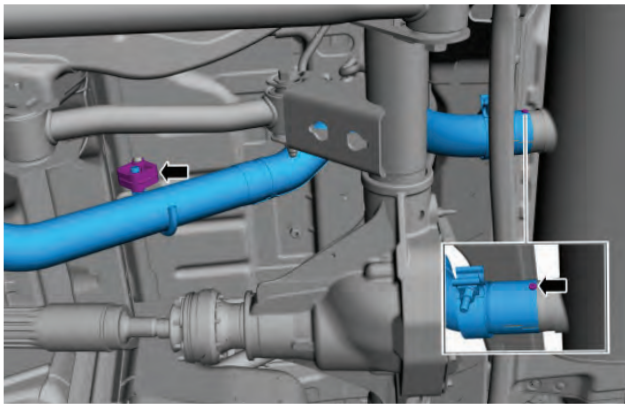


3. Inspect gasket and replace if necessary.

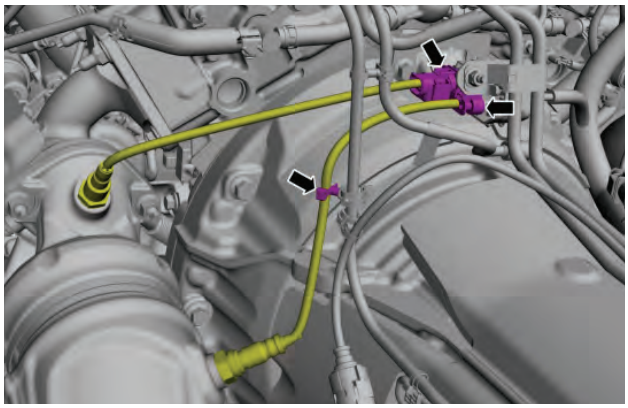




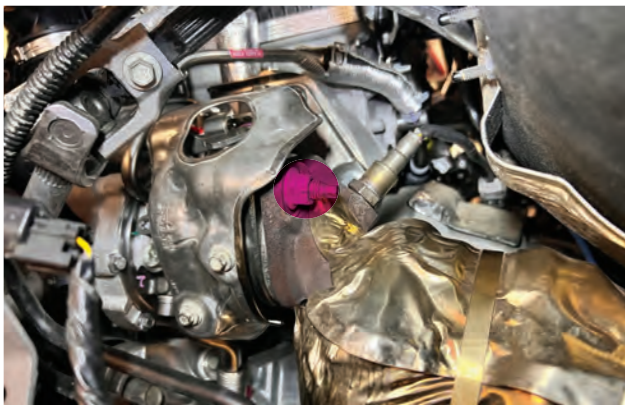
4. Disconnect the isolator and remove the muffler inlet pipe.

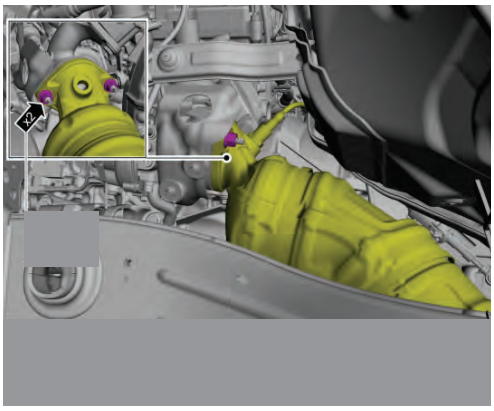


5. Disconnect the electrical connectors and detach the wire clips.

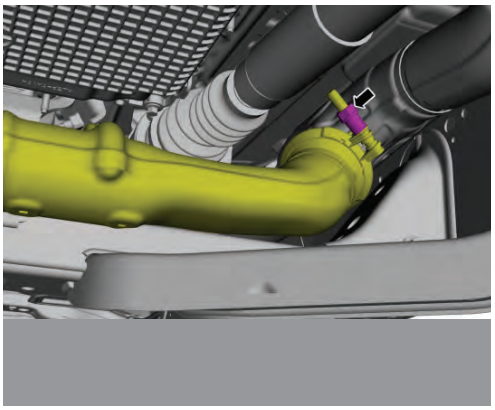


6. Remove the LH catalytic converter nuts and replace if necessary.

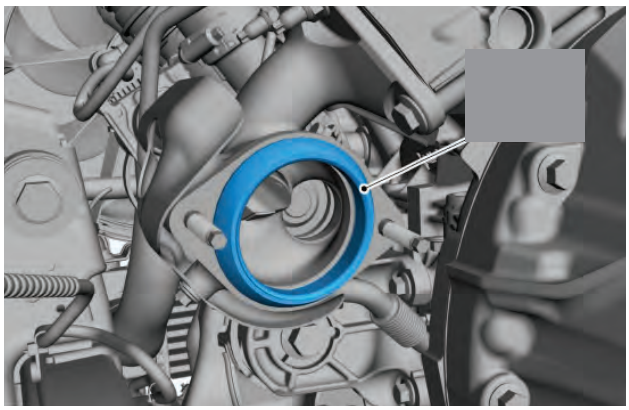




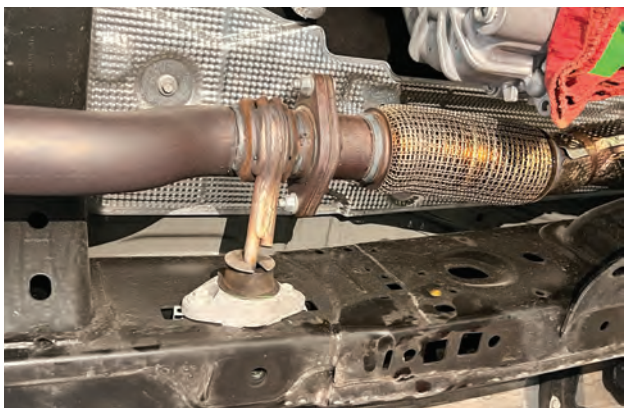
7. Loosen the clamp.

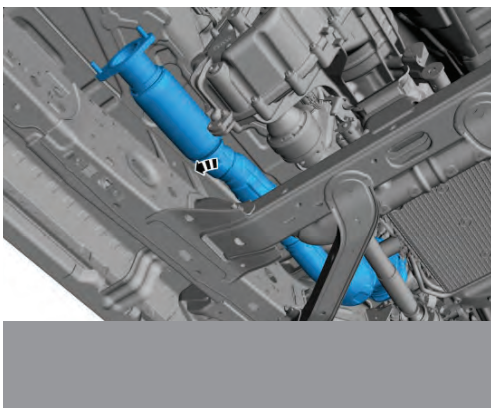


8. Remove the gasket and replace if necessary.



9. Carefully remove the LH catalytic converter from the vehicle.

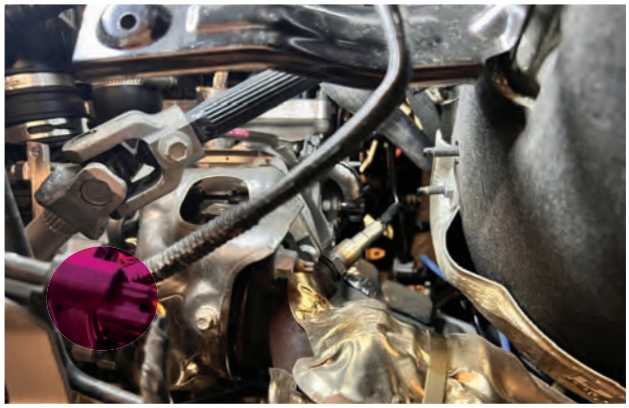


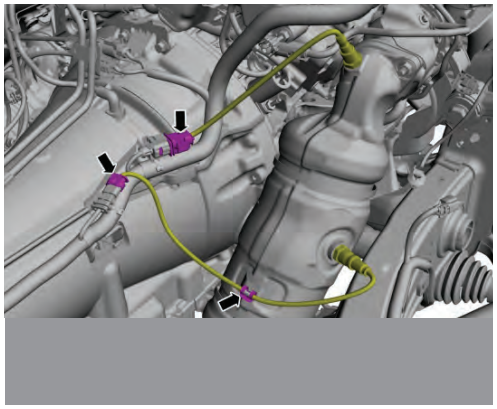


RH CATALYTIC CONVERTER REMOVAL

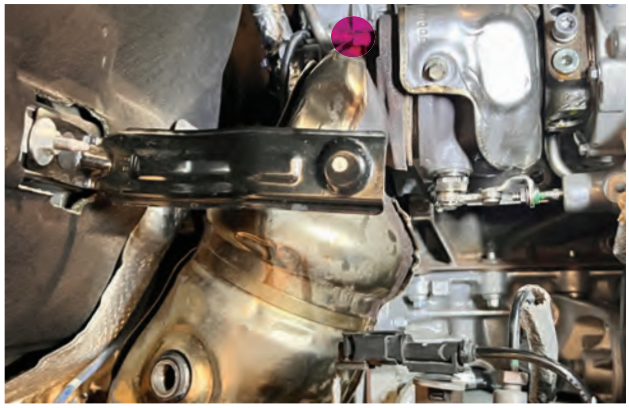
RH CATALYTIC CONVERTER REMOVAL

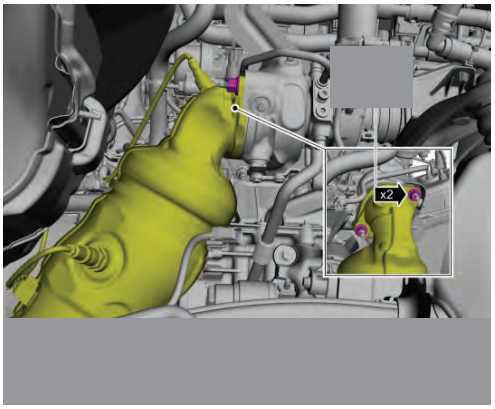
1. Disconnect the electrical connectors and detach the wire clips.



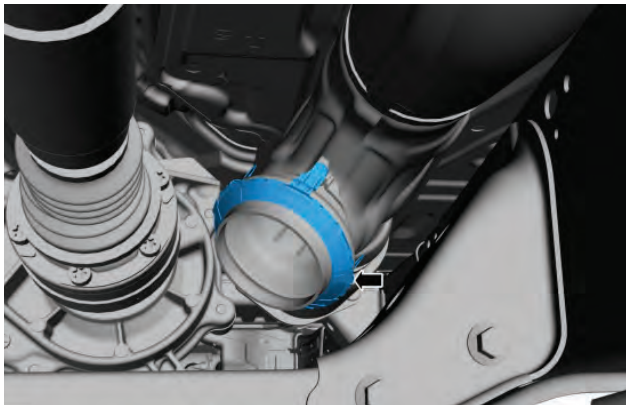


2. Remove the RH catalytic converter nuts and replace if necessary.

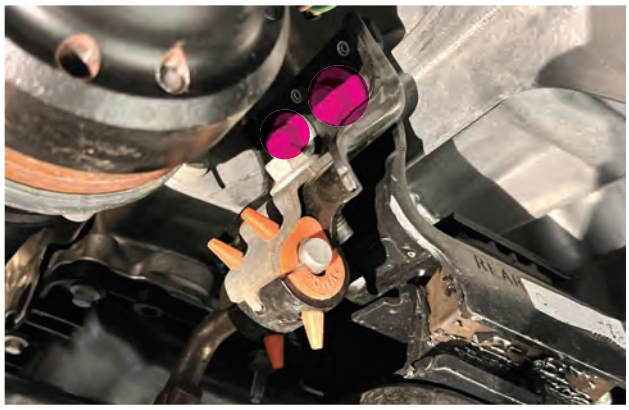


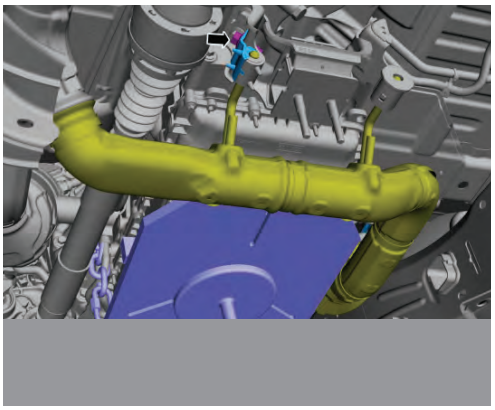


3. Remove the gasket.

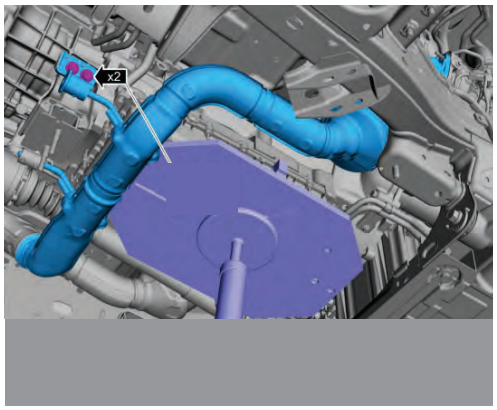


4. Remove the bolt and the hanger bracket.

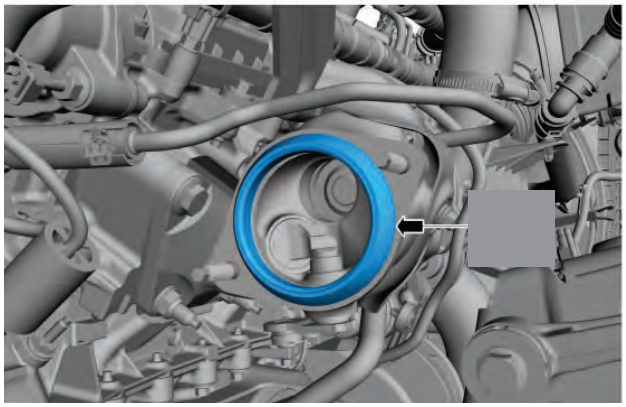




5. Remove the bolts (15mm). Remove the catalytic converter assembly from the vehicle.



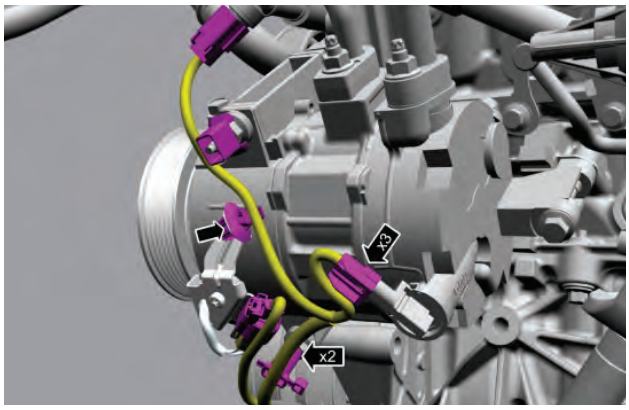
6. Remove the gasket. Inspect and replace if necessary.



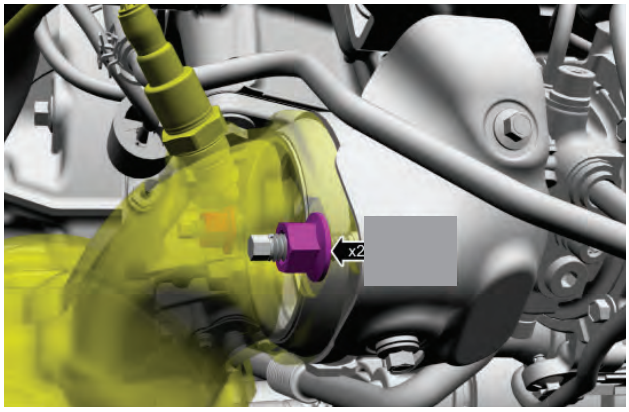
LH TURBOCHARGER REMOVAL

LH TURBOCHARGER REMOVAL

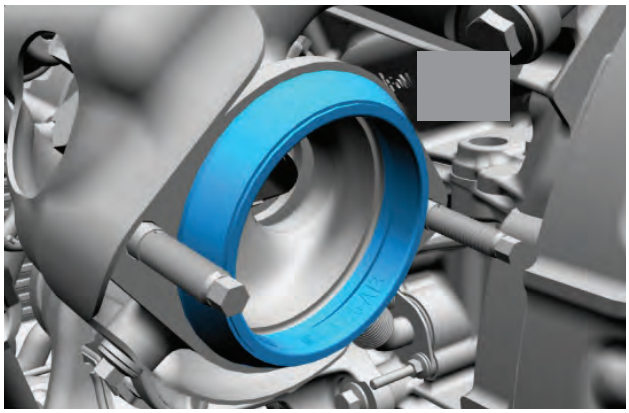
1. Disconnect the electrical connectors, then detach the wiring harness retainers.



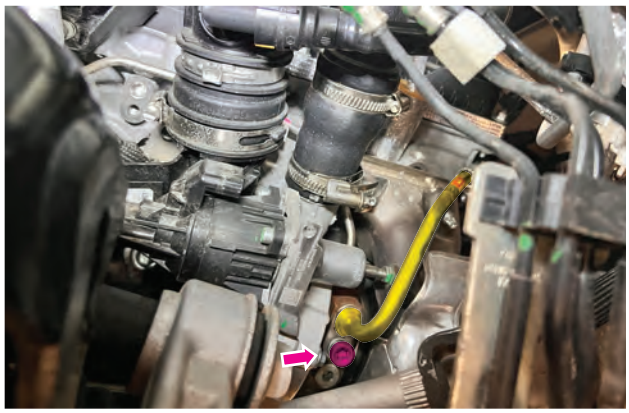
2. Remove the LH turbocharger exhaust flange nuts and replace if necessary.

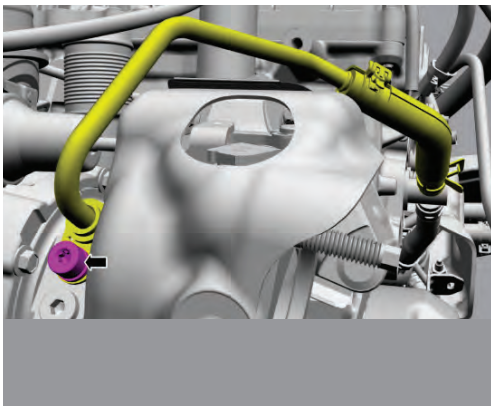


3. Remove the LH turbocharger exhaust flange gasket and replace if necessary..

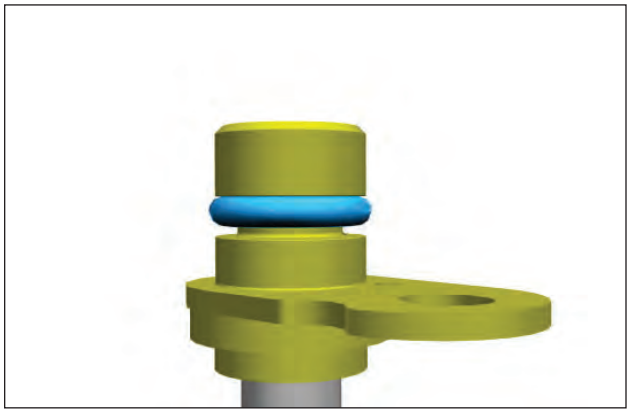


4. Remove the turbocharger coolant return tube bolt, then disconnect the turbocharger coolant return tube from the turbocharger and position it out of the way.



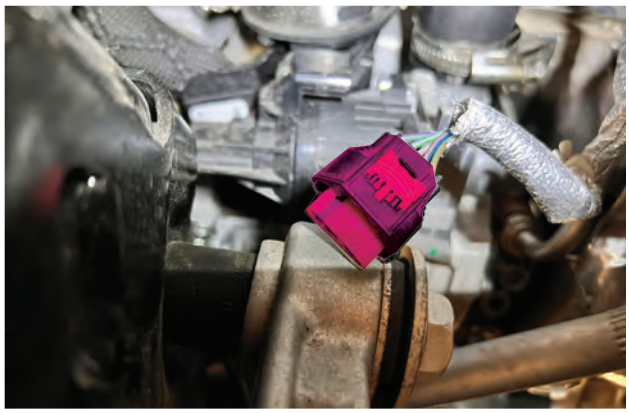


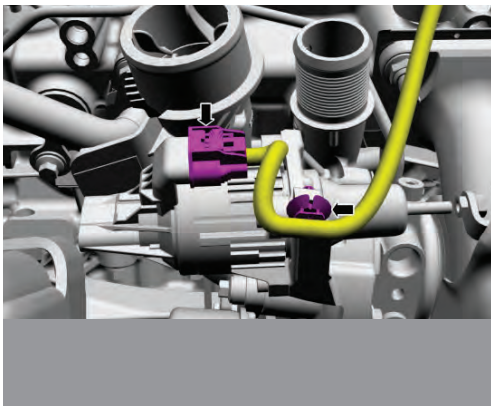
5. Inspect the O-ring and replace if necessary.



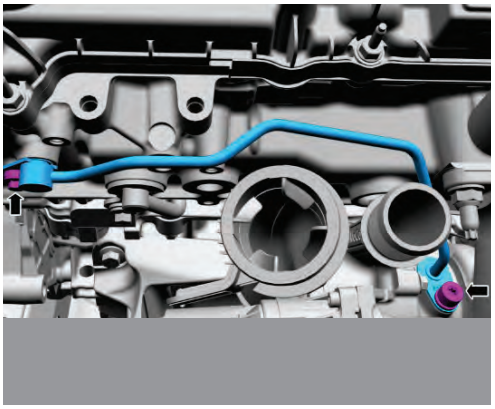
NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

6. Detach the wire harness retainer, then disconnect the electrical connector.





7. Remove the turbocharger oil supply tube bolts using a T45, then remove the turbocharger oil supply tube.



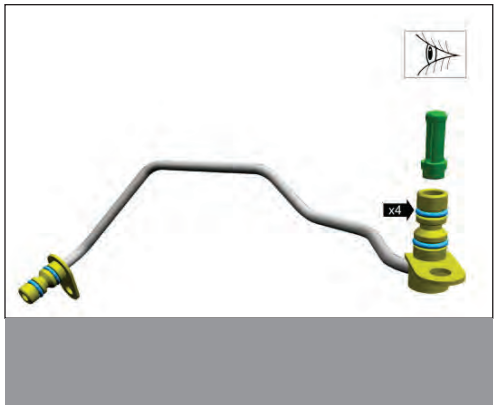
8. Inspect and reuse the O-ring seals and the turbocharger oil supply tube oil filter or replace if necessary.

NOTICE

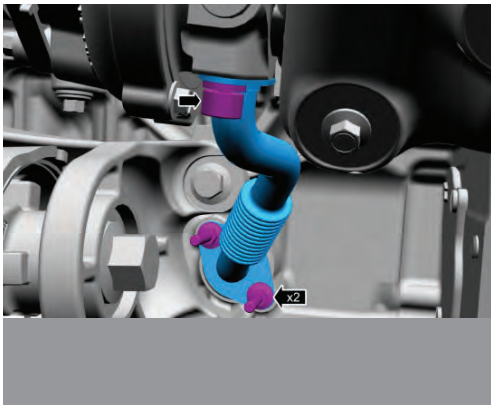
1. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

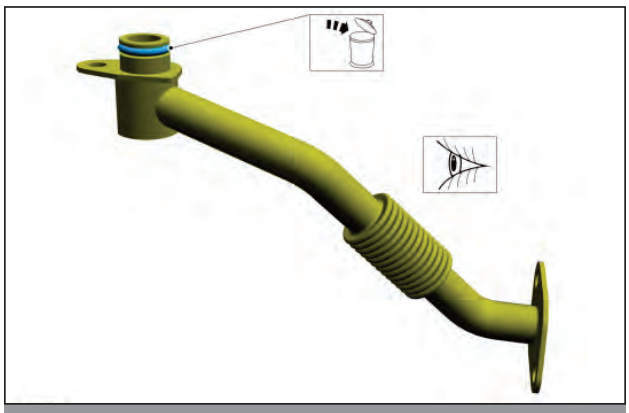
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B



9. Remove the turbocharger oil return tube bolts (8mm), then remove the tube.



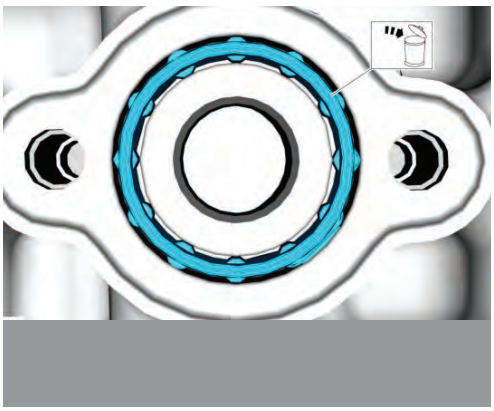
10. Inspect the O-ring seal and replace if necessary.



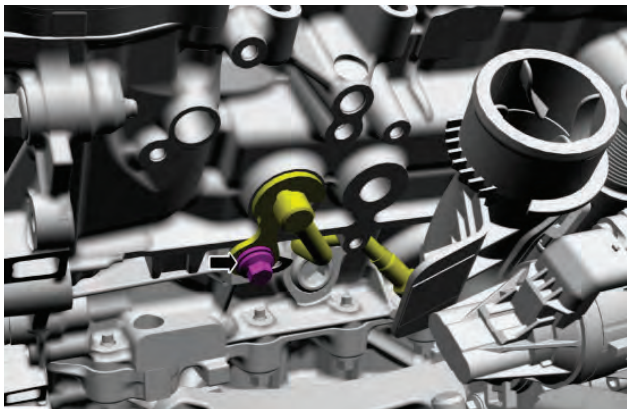
NOTICE

1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Use brake cleaner and a nylon brush to clean. Install new components as needed. Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

11. Inspect the oil return tube gasket and replace if necessary.

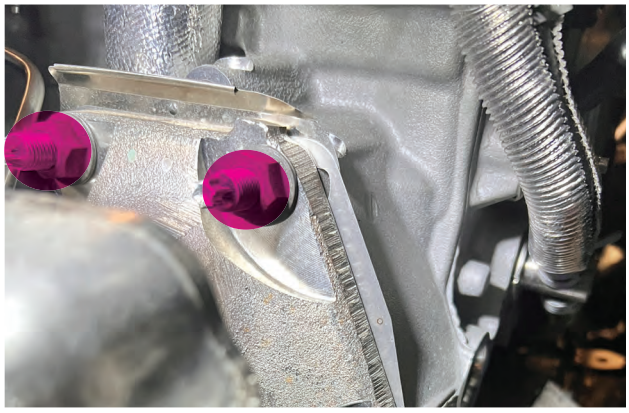


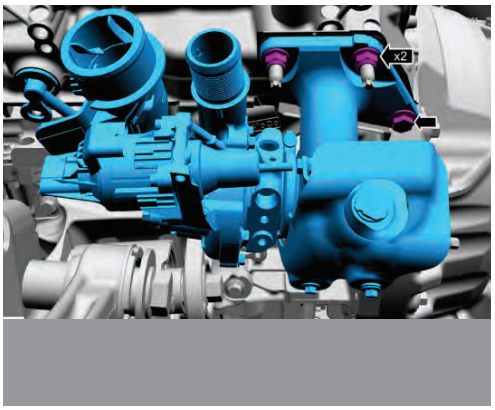
12. Remove the turbocharger coolant supply tube bolt, then disengage the tube from the engine block.



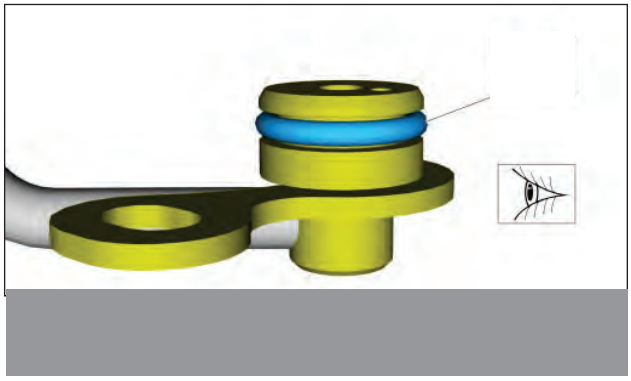
13. Remove the turbocharger coolant supply tube from the engine block while removing the turbocharger.

Remove the turbocharger nuts, then remove the turbocharger.





14. Inspect the O-ring seal and replace if necessary.

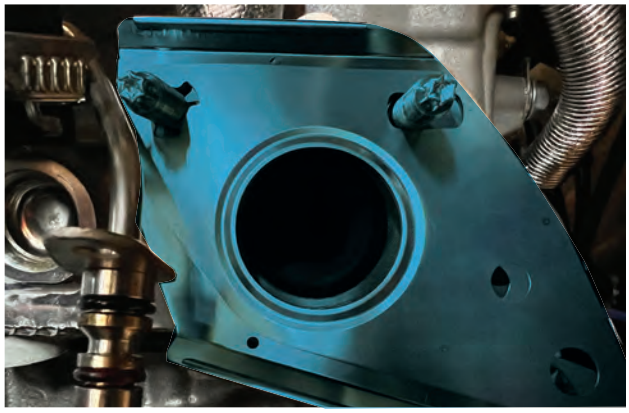


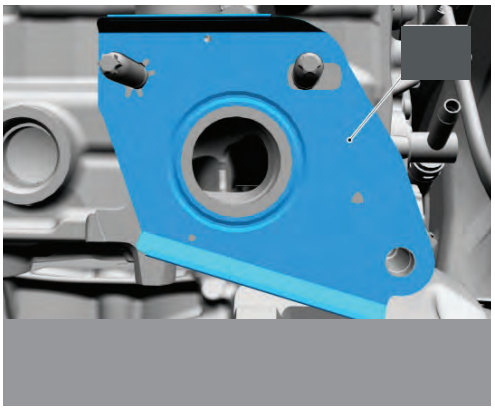
NOTICE

1. NOTICE: Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

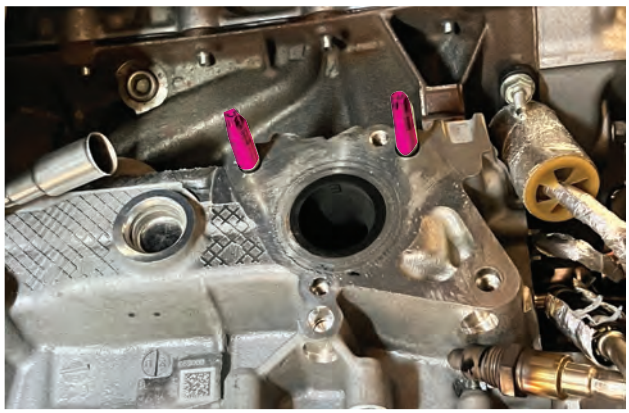
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

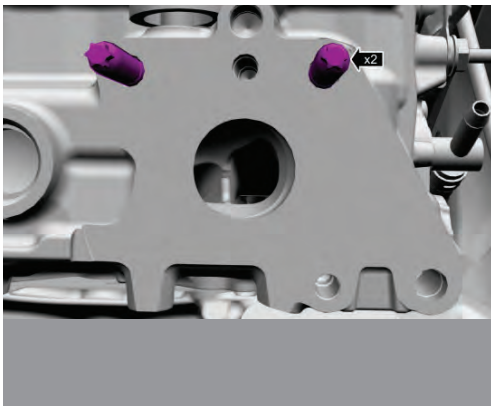
15. Inspect the turbocharger gasket and replace if necessary.



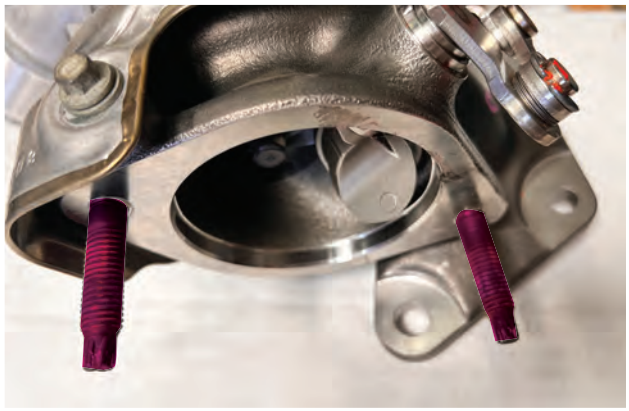


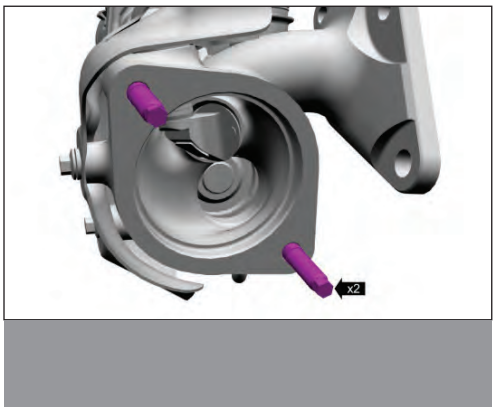
16. Remove the turbocharger mounting studs.



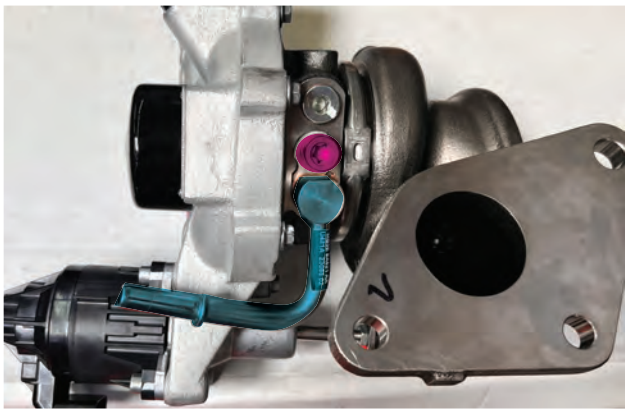


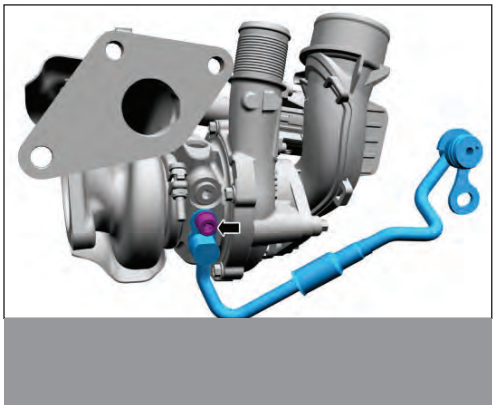
17. Remove the turbocharger exhaust flange studs.





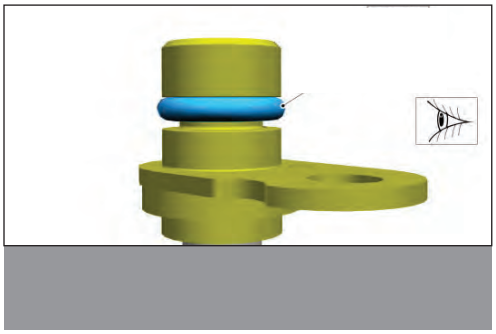
18. Remove the bolt, then remove the turbocharger coolant supply tube.



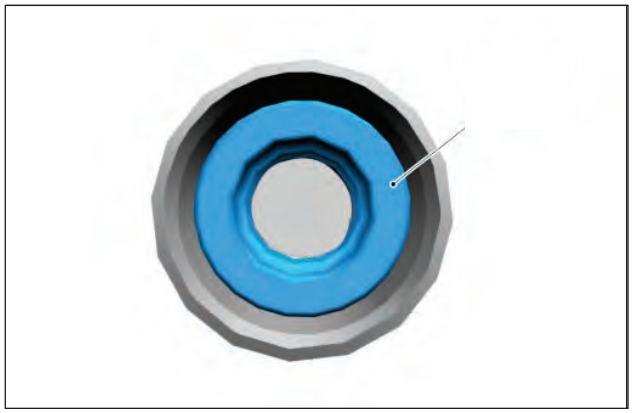


19. Inspect the O-ring seal and replace if necessary.

NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

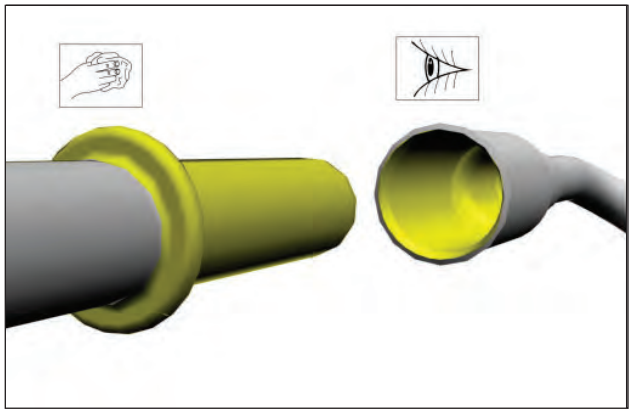


20. Inspect the rubber gasket and replace if necessary.



NOTICE
If the 2 piece turbocharger cooling tubes are separated or the rubber gasket is leaking, then the rubber gasket must be replaced.

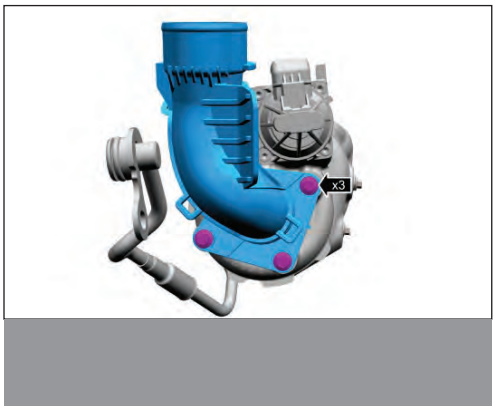
21. If needed, inspect and clean the turbocharger cooling tube sealing surfaces, using brake cleaner and a nylon brush to clean. Install new components as needed.



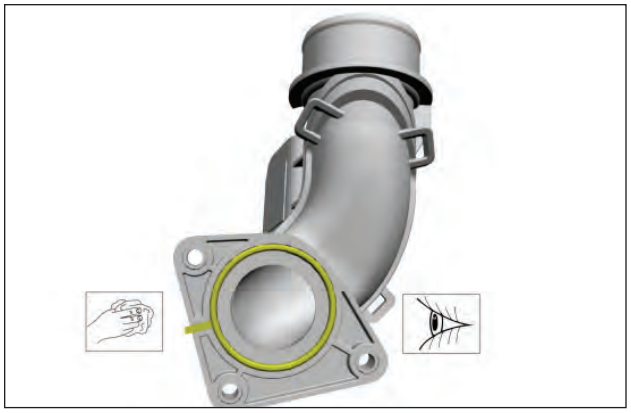
NOTICE
Do not use a metal brush, damage to sealing area will result in leaks.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

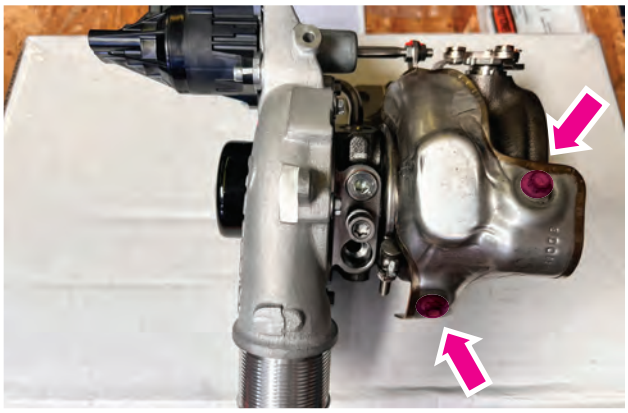
22. Remove the turbocharger elbow adapter bolts, then remove the elbow adapter.



23. Inspect, clean and replace the gasket as needed.

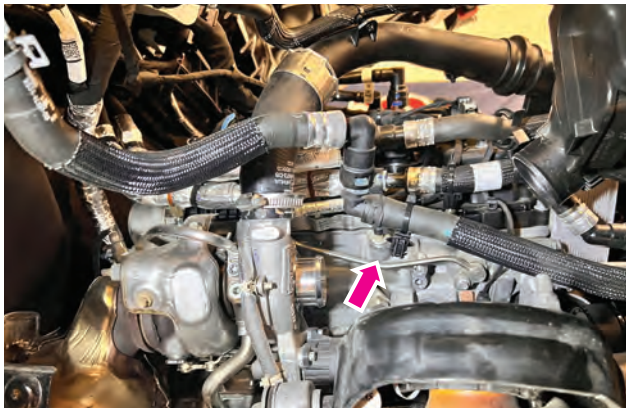


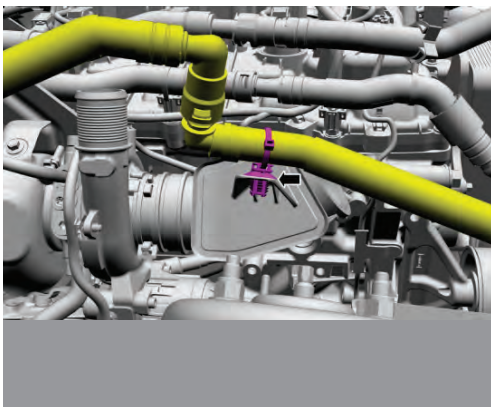
24. Remove the heat shield bolts, then remove the heat shield.



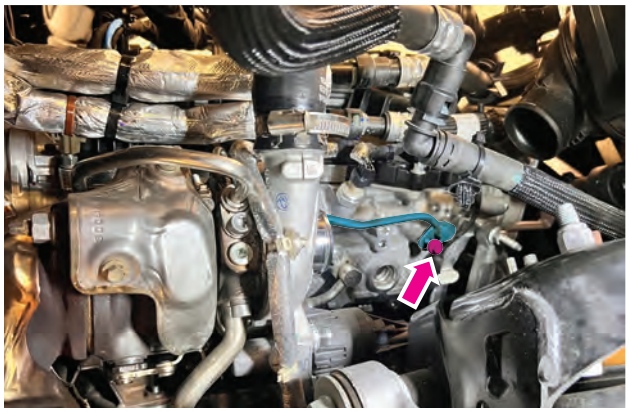
RH TURBOCHARGER REMOVAL

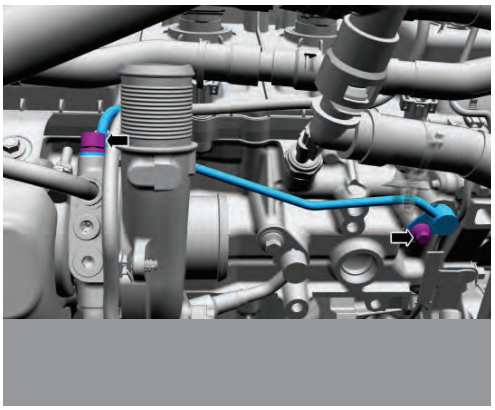
1. Detach the hose retainer and move the hose out of the way.





2. Remove the turbocharger oil supply tube bolts (8mm, T45) then remove the turbocharger oil supply tube.

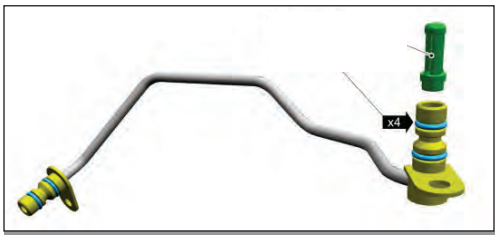




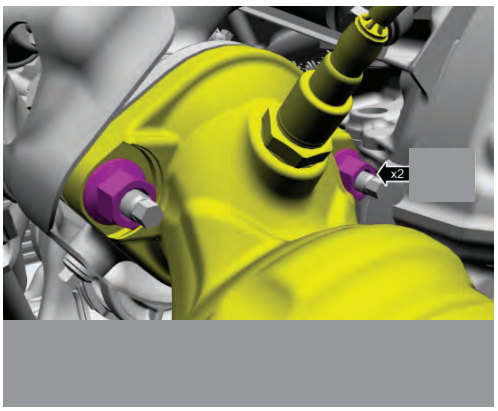
3. Inspect the O-ring seals and the turbocharger oil supply tube oil filter and replace if necessary.

NOTICE

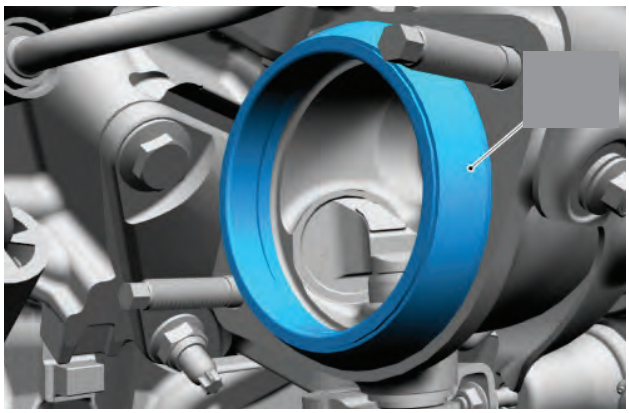
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B



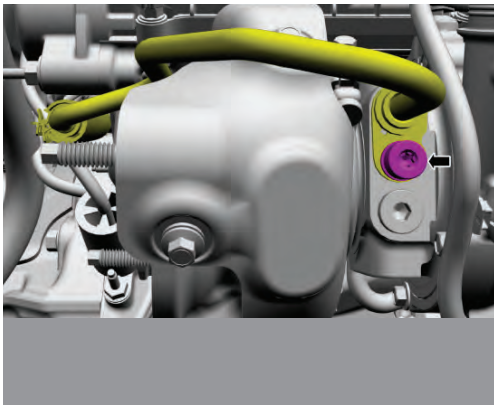
4. Remove the RH turbocharger exhaust flange nuts. (15mm)



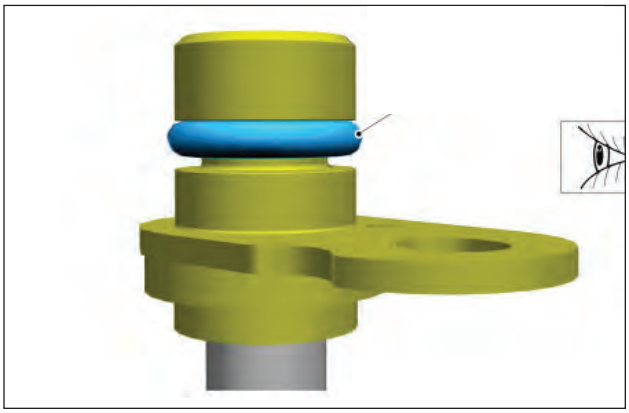
5. Remove the RH turbocharger exhaust flange gasket.



6. Remove the turbocharger coolant return tube bolt, then disconnect the turbocharger coolant return tube from the turbocharger and position it out of the way. (T45)



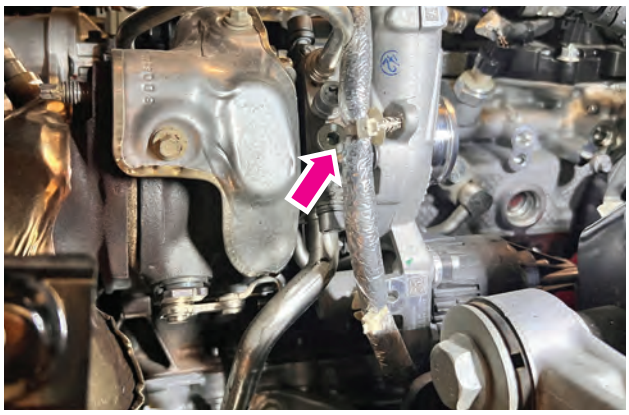
7. Inspect the O-ring seal and replace if necessary.

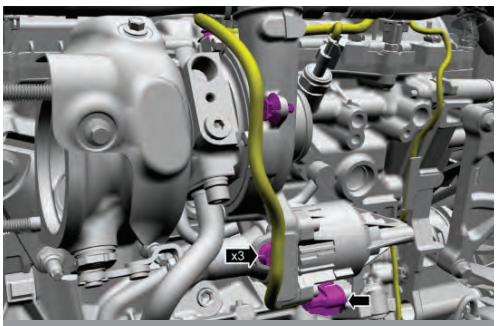


NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

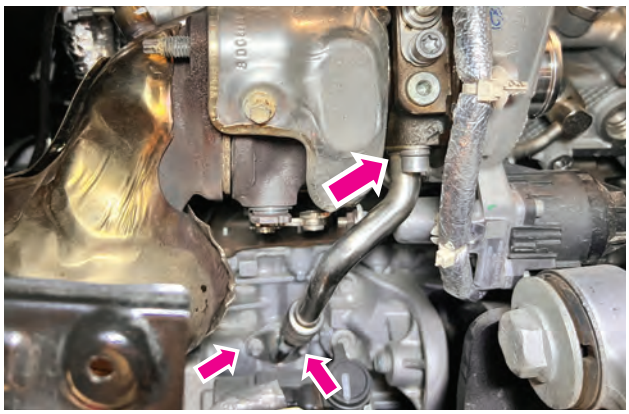
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

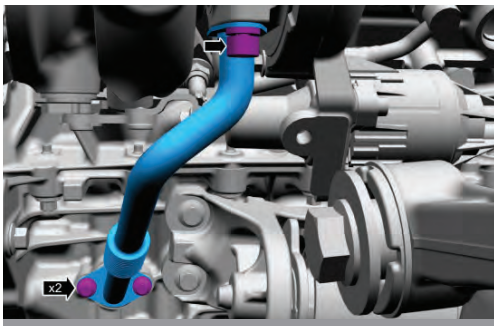
8. Detach the wire harness retainers, then disconnect the electrical connector.





9. Remove the turbocharger oil return tube bolts (8mm,T45), then remove the tube.





Part: JT4Z-9448-D QTY: 1

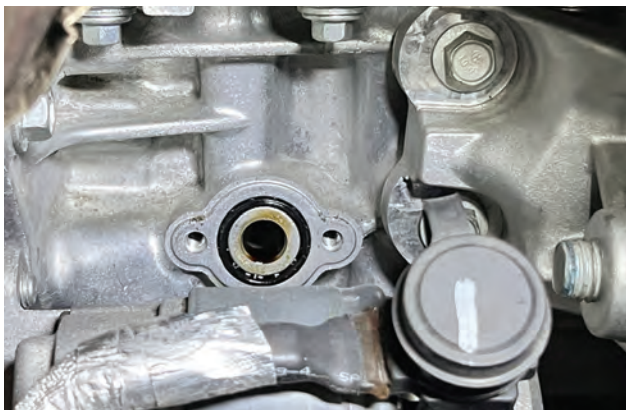
10. Inspect the O-ring seal and replace if necessary.

NOTICE

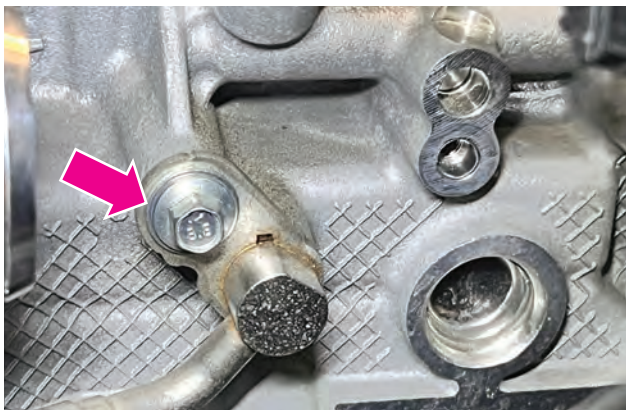
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Use brake cleaner and a nylon brush to clean. Install new components as needed. Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

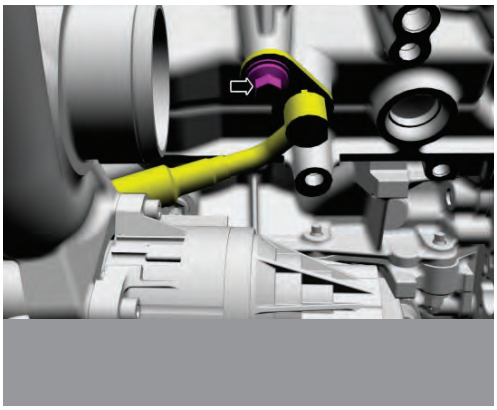
2. Do not use a metal brush, damage to sealing area will result in leaks. Ensure that the retaining bracket is not bent, check for squareness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed. Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

11. Inspect the turbocharger oil return tube gasket and replace if necessary.



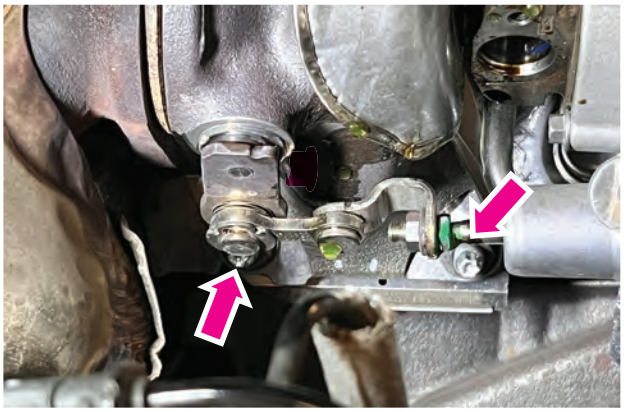
12. Remove the turbocharger coolant supply tube bolt (10mm).

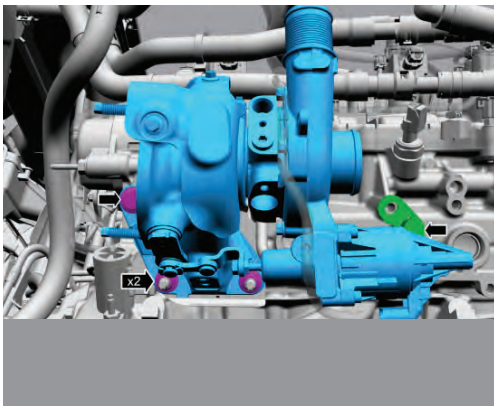




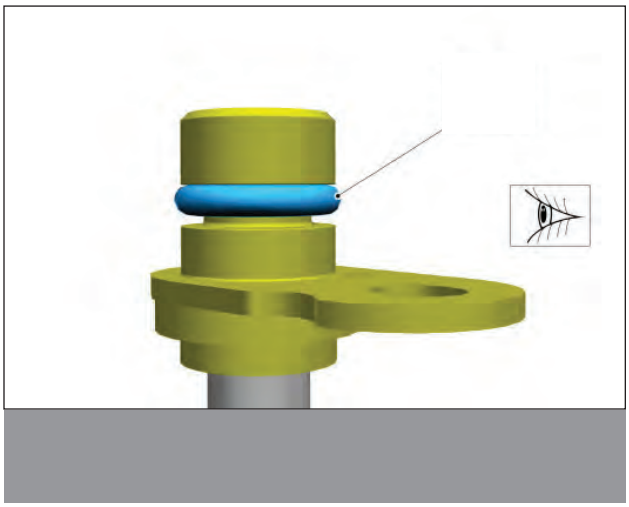
13. Remove the turbocharger coolant supply tube from the engine block while removing the turbocharger.

Remove the turbocharger nuts, then remove the turbocharger.





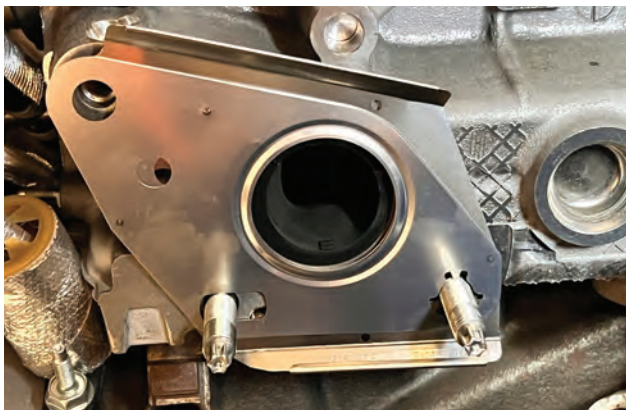
14. Inspect the O-ring seal and replace if necessary.

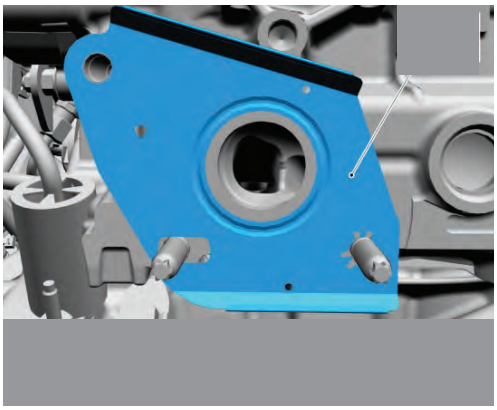


NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

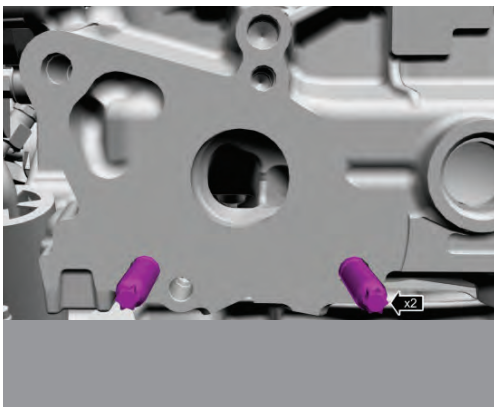
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

15. Inspect the turbocharger gasket and replace if necessary.



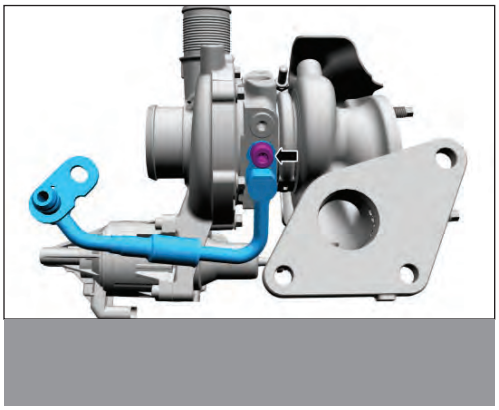


16. Remove the turbocharger mounting studs.

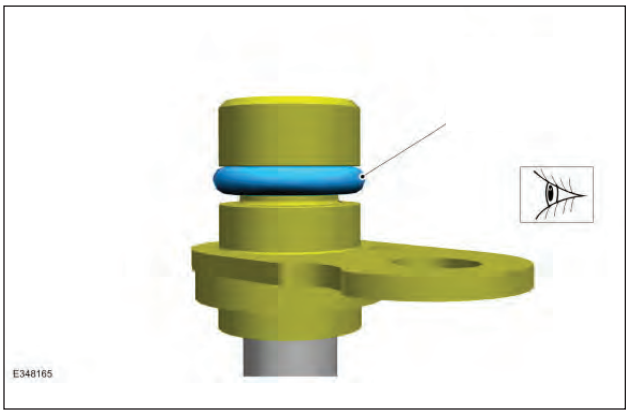


17. Remove the turbocharger exhaust flange studs.

18. Remove the bolt, then remove the turbocharger coolant supply tube.

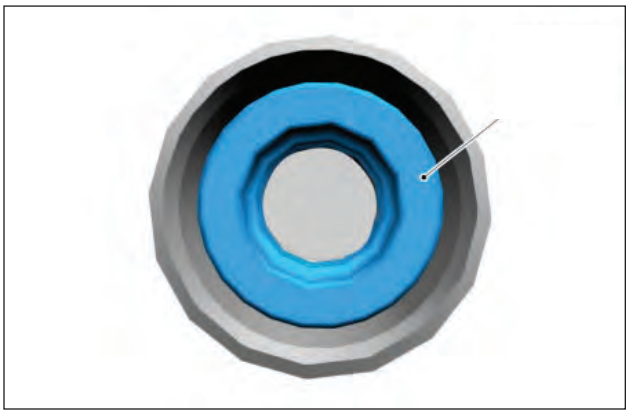


19. Inspect the O-ring seal and replace if necessary.



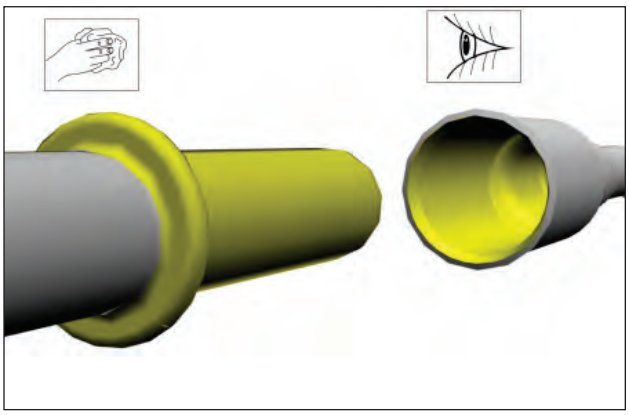
NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks. If Removed, inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

20. Inspect the rubber gasket and replace if necessary.



NOTICE
If the 2 piece turbocharger cooling tubes are separated or the rubber gasket is leaking, then the rubber gasket must be replaced.
If needed, then remove and discard the rubber gasket.

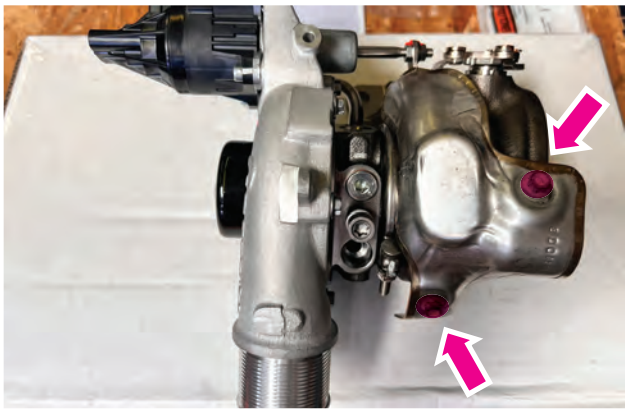
21. Inspect and clean the turbocharger cooling tube sealing surfaces, using brake cleaner and a nylon brush to clean. Install new components as needed.



NOTICE
Do not use a metal brush, damage to sealing area will result in leaks.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

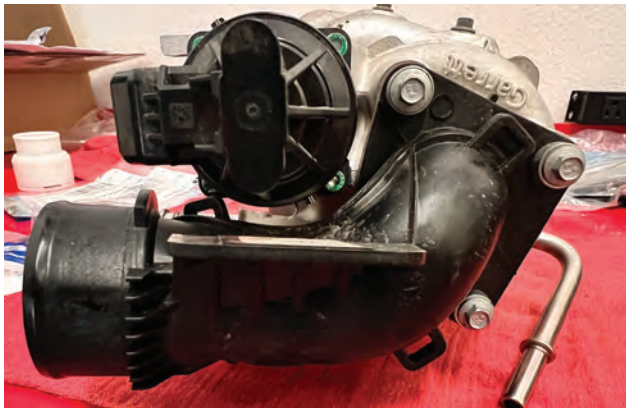
22. Remove the heat shield bolts, then remove the heat shield.

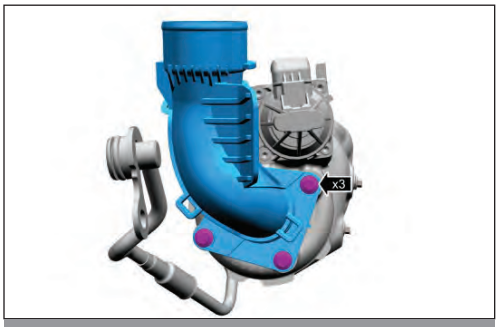


LH TURBOCHARGER INSTALL

LH TURBOCHARGER INSTALL

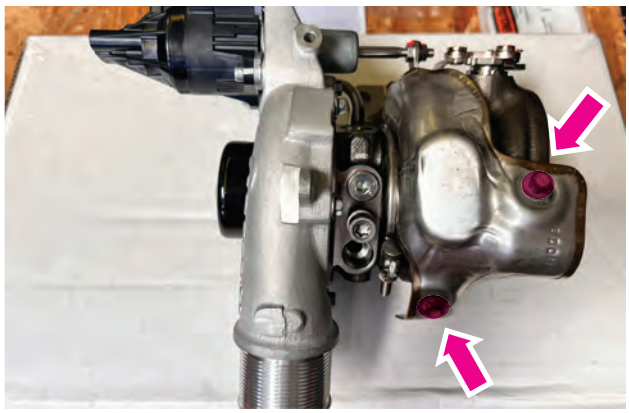
1. Install the turbocharger elbow adapter, then install and tighten with the provided bolt and reused stock bolts.





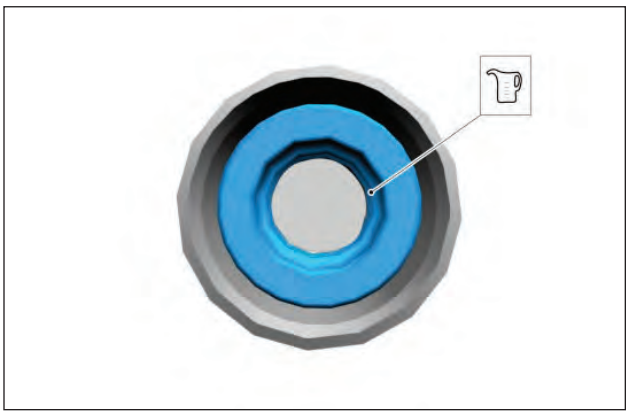
TORQUE
97 lb.in (11 Nm)

2. Install the heat shield and tighten the bolts.

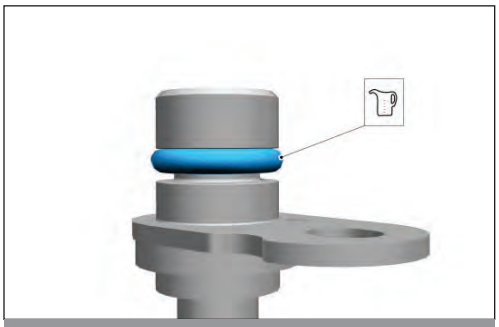


TORQUE
97 lb.in (11 Nm)

3. Install the turbocharger cooling tube rubber gasket, then lubricate with clean engine coolant.



4. Inspect O-ring seal and replace if necessary. Lubricate the new O-ring seal with clean engine coolant.



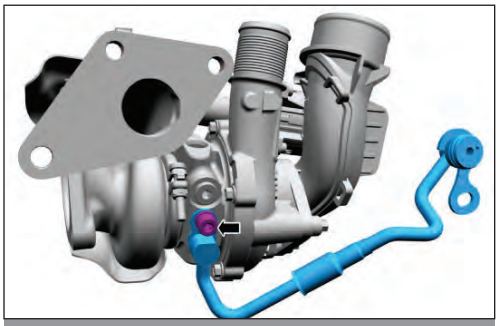
Part: FT4Z-6N652-D QTY: 1

5. Install the turbocharger coolant supply tube to the turbocharger, then install and tighten the turbocharger coolant supply tube bolt.

NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks.

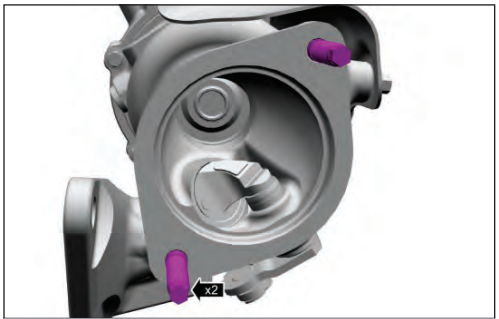
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B



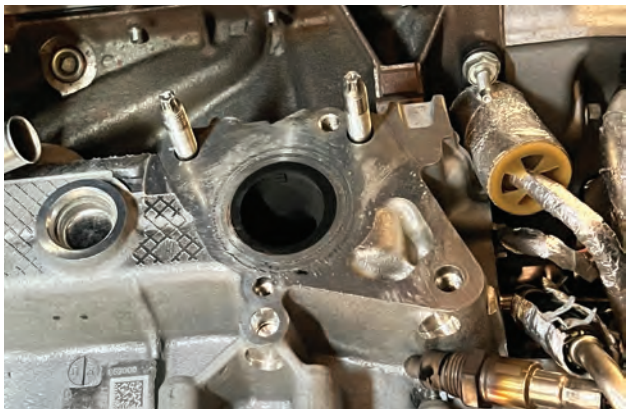
TORQUE
89 lb.in (10 Nm)

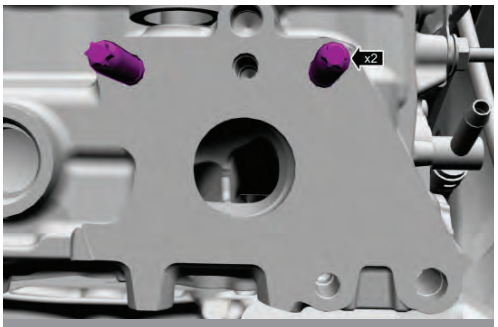
6. Install and tighten the turbocharger exhaust flange studs.



TORQUE
18 lb.ft (25 Nm)

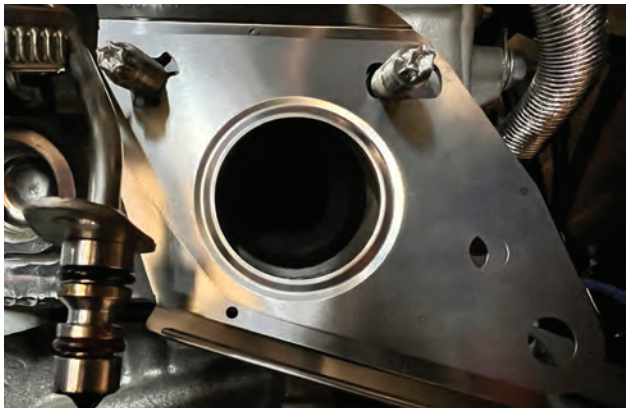
7. Install and tighten the turbocharger mounting studs.

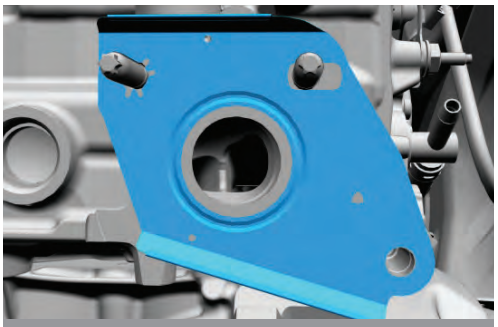




TORQUE
106 lb.in (12 Nm)

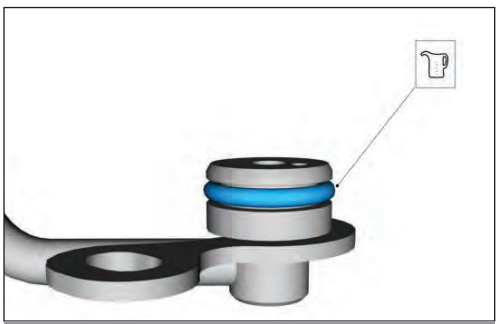
8. Install the turbocharger gasket. Inspect and replace if necessary.





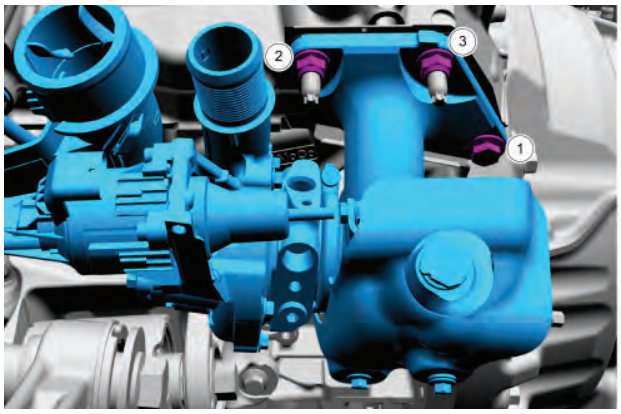
Part: JT4Z-9448-D QTY: 1

9. Install the O-ring seal. Inspect and replace if necessary. Lubricate with clean engine coolant.



Part: FT4Z-6N652-D QTY: 1

10.



NOTICE
1. NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.

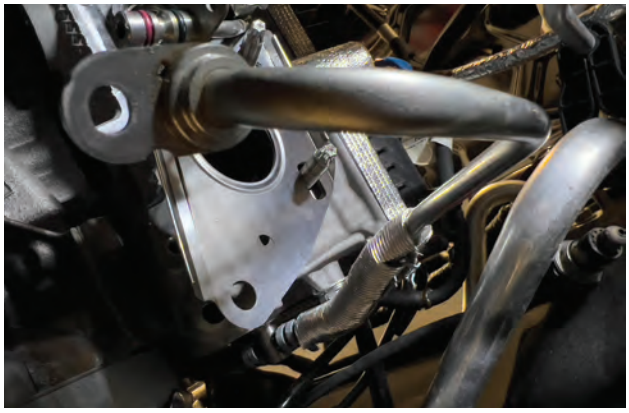
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

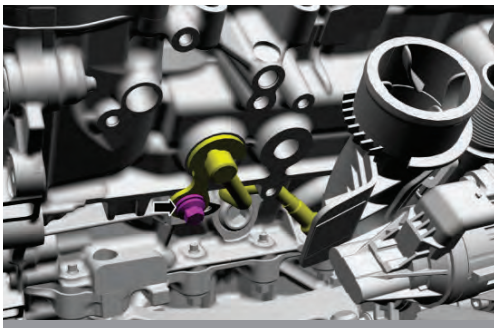
2. Install the turbocharger coolant supply tube to the engine block while installing the turbocharger. Loosely install the turbocharger retainers.

Tighten the turbocharger retainers in the following 3 stages, in the sequence shown.

Tighten 1 to : 89 lb.in (10 Nm) Tighten 2 to : 177 lb.in (20 Nm) Tighten 3 to : 177 lb.in (20 Nm)	Tighten 1 to : 44 lb.ft (60 Nm) Tighten 2 to : 44 lb.ft (60 Nm) Tighten 3 to : 27 lb.ft (37 Nm)	Re-tighten 1 to : 44 lb.ft (60 Nm) Re-tighten 2 to : 44 lb.ft (60 Nm) Re-tighten 3 to : 27 lb.ft (37 Nm)

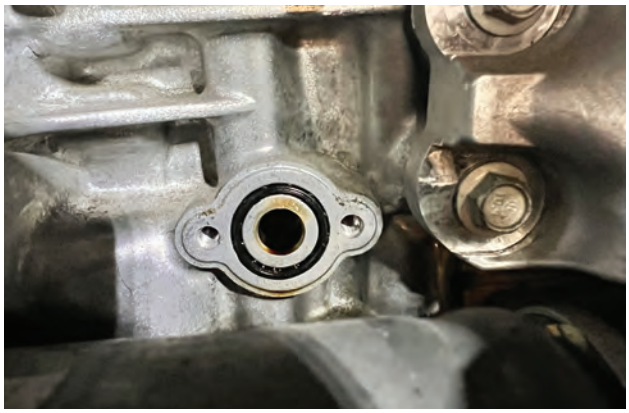
11. Install and tighten the turbocharger coolant supply tube bolt.

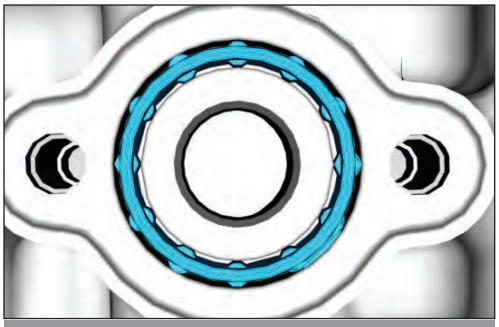




TORQUE
18 lb.ft (24 Nm)

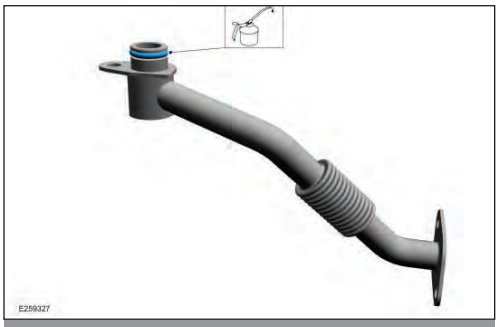
12. Install the turbocharger oil return tube gasket. Inspect and replace if necessary.





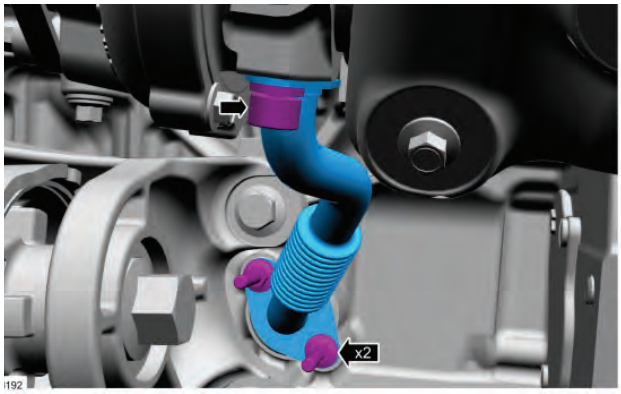
Part: FT4Z-6N652-F QTY: 1

13. Install O-ring seal. Inspect and replace if necessary. Then lubricate with clean engine oil.



Part: ML3Z-6N652-F QTY: 1

14. Install the turbocharger oil return tube, then install and tighten the bolts.

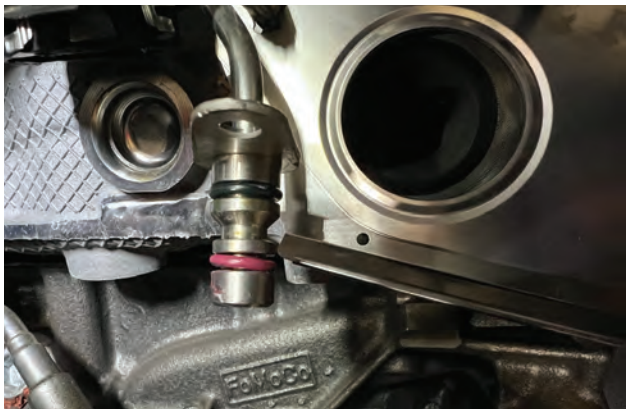


NOTICE
1 Do not use a metal brush, damage to sealing area will result in leaks.

Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

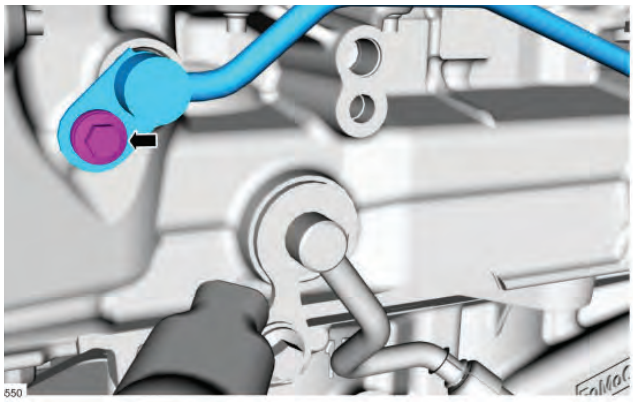
TORQUE
89 lb.in (10 Nm)

15. Install the O-ring seals on the oil supply tube. Insert the supplied check valve in the cylinder head side of the oil supply tube and insert the oil filter in the check valve assembly. See illustration for reference. Lubricate the O-ring seals with clean engine oil.



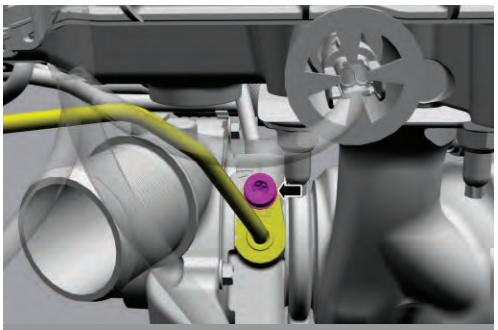
Black: Part: ML3Z-62652-G QTY: 1
Red: Part: JT4Z-6N652-A QTY:1

16. Install the turbocharger oil supply tube, then loosely install the bolt.



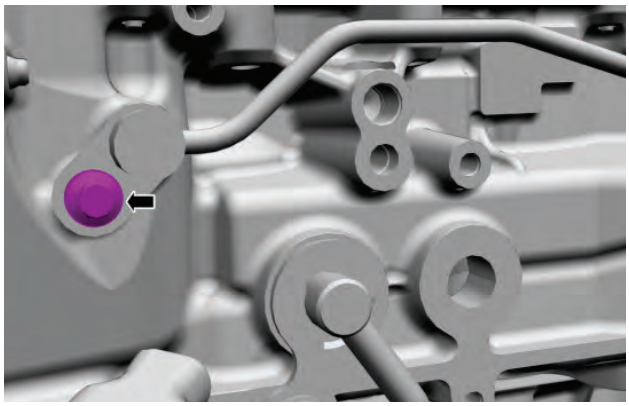
NOTICE
Do not use a metal brush; damage to sealing area will result in leaks. Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore and the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed. Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

17. Connect the turbocharger oil supply tube to the turbocharger, then install and tighten the bolt.



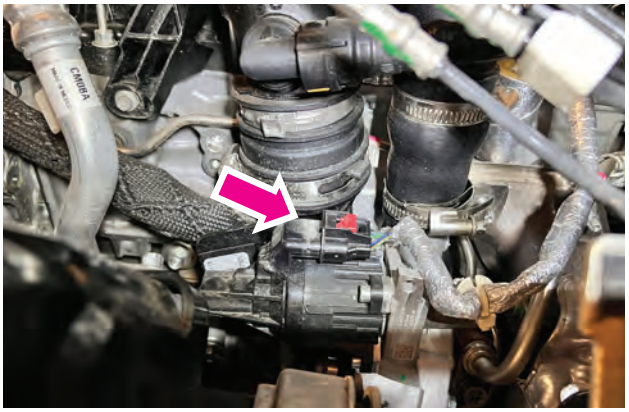
TORQUE
89 lb.in (10 Nm)

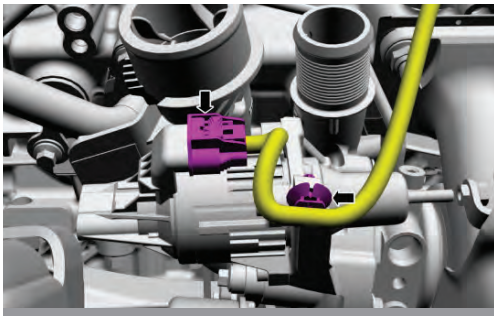
18. Tighten the turbocharger oil supply tube bolt.



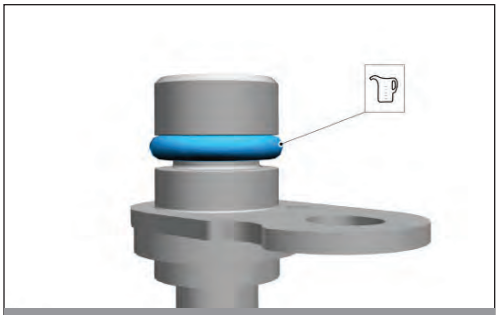
TORQUE
89 lb.in (10 Nm)

19. Connect the electrical connector, then attach the wire harness retainer.



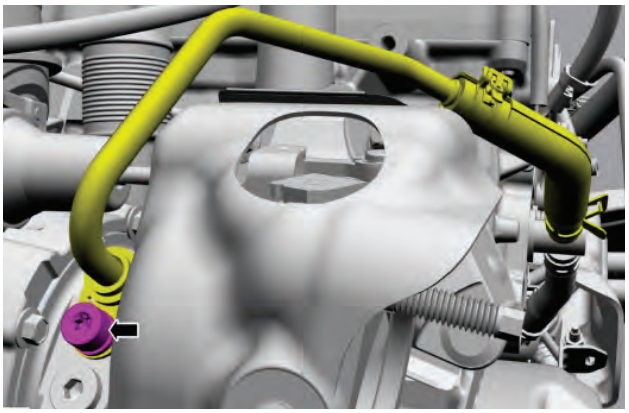


20. Install turbocharger coolant return tube O-ring seal. Inspect and replace if necessary. Then lubricate with clean engine coolant.



Part: FT4Z-6N652-D QTY: 1

21. Install the turbocharger coolant return tube to the turbocharger, then install and tighten the turbocharger coolant return tube bolt.

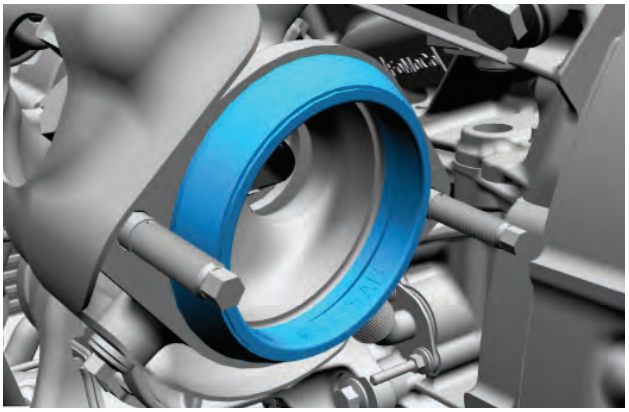


NOTICE
Do not use a metal brush, damage to sealing area will result in leaks.

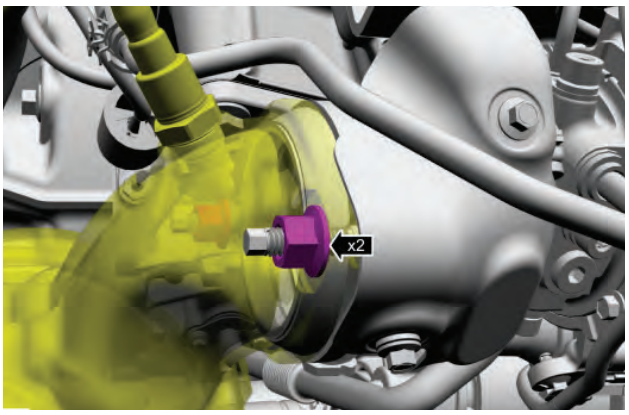
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

TORQUE
89 lb.in (10 Nm)

22. Install the LH turbocharger exhaust flange gasket.

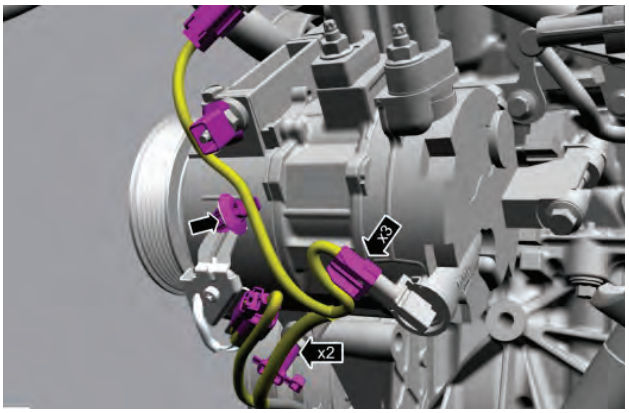


23. Install and evenly tighten the LH turbocharger exhaust flange nuts.



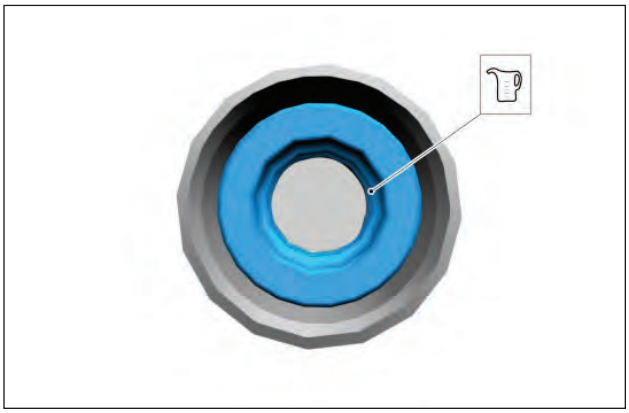
TORQUE
30 lb.ft (40 Nm)

24. Connect the electrical connectors and attach the wiring harness retainers.

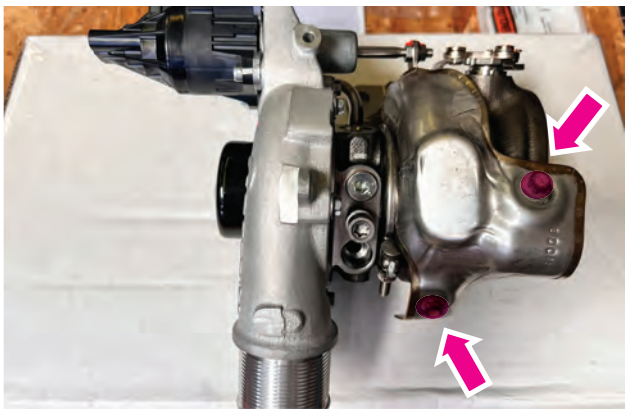


RH TURBOCHARGER INSTALL

1. Install the turbocharger cooling tube rubber gasket, then lubricate with clean engine coolant.

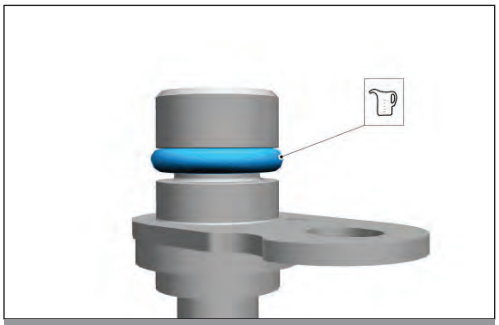


2. Install the heat shield and tighten the bolts.



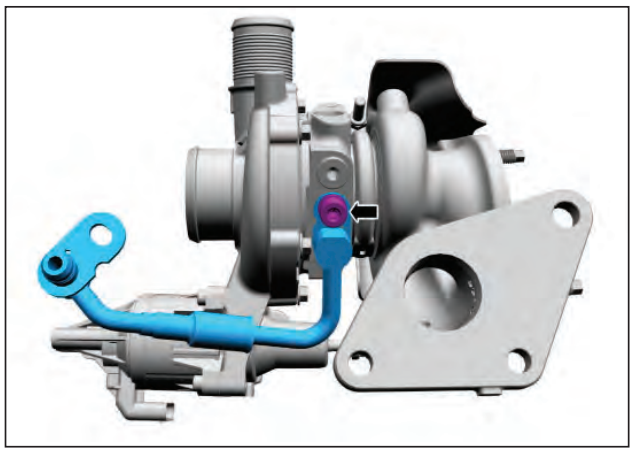
TORQUE
97 lb.in (11 Nm)

3. Install an O-ring seal. Inspect and replace if necessary. Lubricate the O-ring seal with clean engine coolant.



Part: FT4Z-6N652-D QTY: 1

4. Install the turbocharger coolant supply tube to the turbocharger, then install and tighten the bolt.



NOTICE
Do not use a metal brush, damage to sealing area will result in leaks.

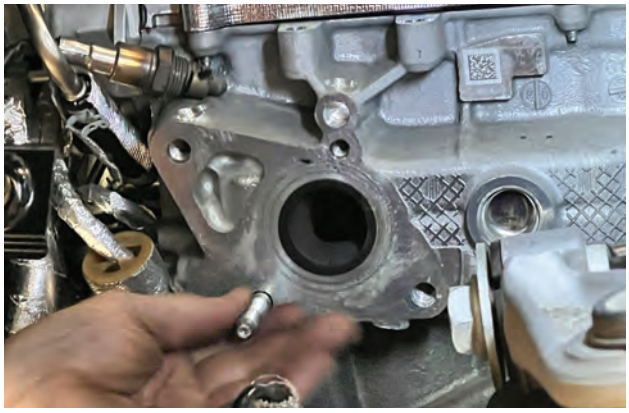
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

TORQUE
89 lb.in (10 Nm)

5. Install and tighten the turbocharger exhaust flange studs.

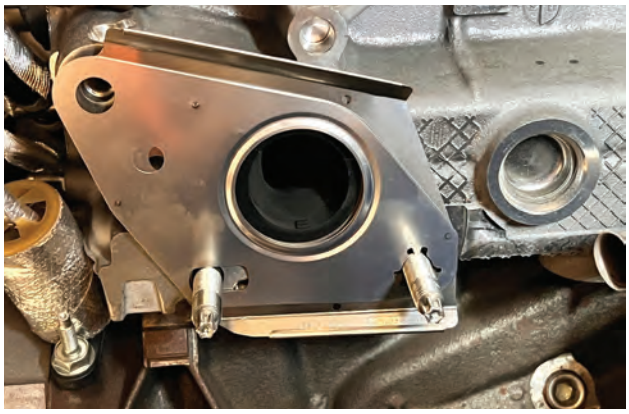
TORQUE
18 lb.ft (25 Nm)

6. Install and tighten the turbocharger mounting studs.



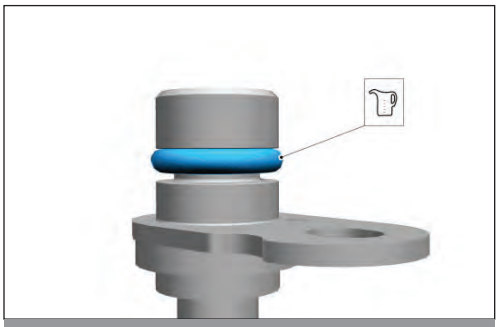
TORQUE
106 lb.in (12 Nm)

7. Install the new turbocharger gasket.



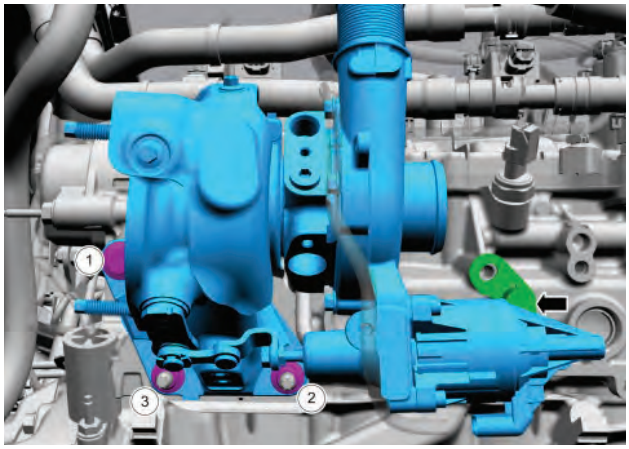
Part: JT4Z-9448-D QTY: 1

8. Install a new turbocharger coolant return tube O-ring seal, then lubricate with clean engine coolant.



Part: FT4Z-6N652-D QTY: 1

9. If removed, install and tighten the turbocharger mounting studs.



NOTICE

1. NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.

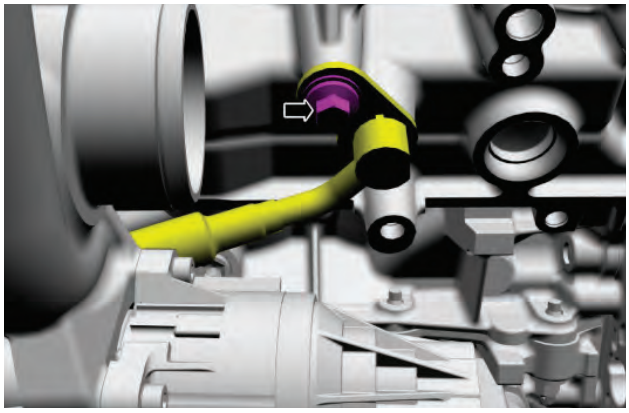
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

2. Install the turbocharger coolant supply tube to the engine block while installing the turbocharger. Loosely install the turbocharger retainers.

Tighten the turbocharger retainers in the following 3 stages, in the sequence shown.

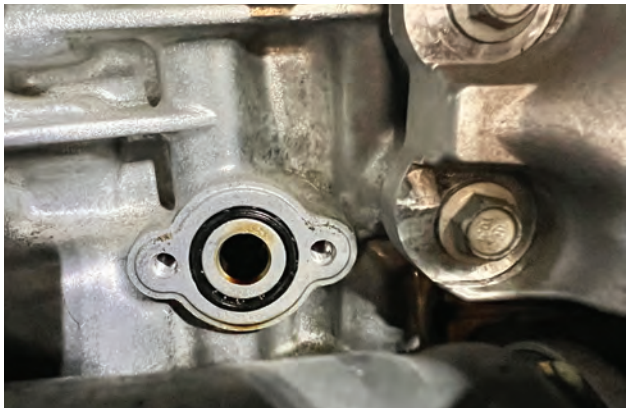
Tighten 1 to : 89 lb.in (10 Nm) Tighten 2 to : 177 lb.in (20 Nm) Tighten 3 to : 177 lb.in (20 Nm)	Tighten 1 to : 44 lb.ft (60 Nm) Tighten 2 to : 44 lb.ft (60 Nm) Tighten 3 to : 27 lb.ft (37 Nm)	Re-tighten 1 to : 44 lb.ft (60 Nm) Re-tighten 2 to : 44 lb.ft (60 Nm) Re-tighten 3 to : 27 lb.ft (37 Nm)

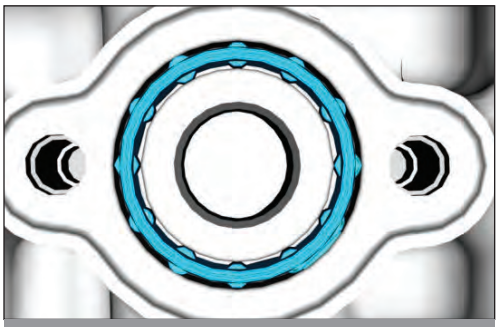
10. Install and tighten the turbocharger coolant supply tube bolt.



TORQUE
18 lb.ft (24 Nm)

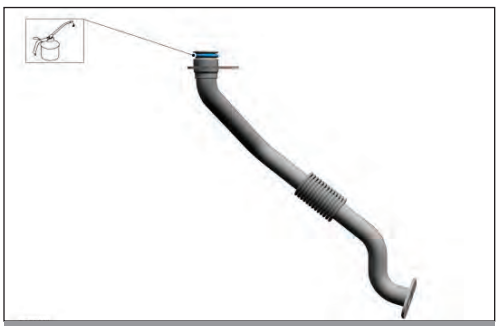
11. Install the new turbocharger oil return tube gasket.





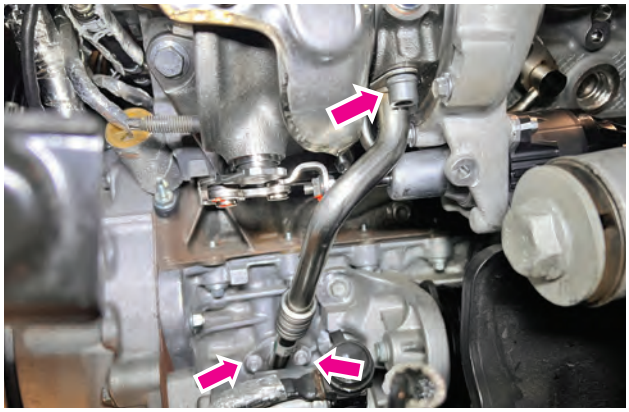
Part: FT4Z-6N652-F QTY: 1

12. Install a new O-ring seal, then lubricate with clean engine oil.



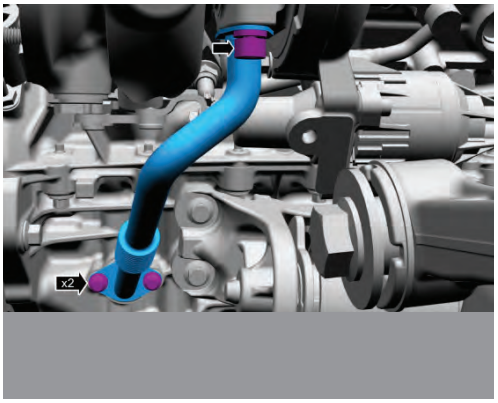
Part: ML3Z-6N652-F QTY: 1v

13. Inspect the area for deep scratches and gouges. Install and tighten the oil return bolts.

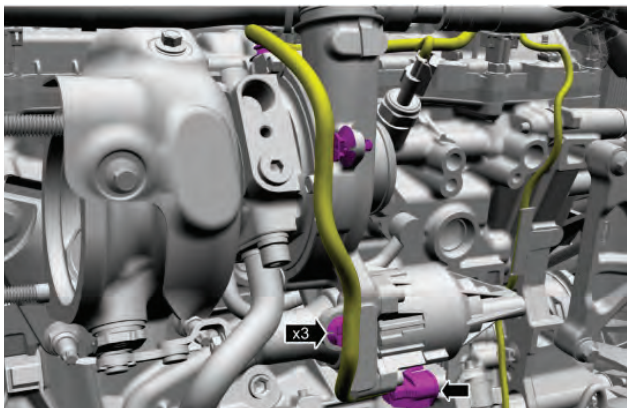


NOTICE
1. Do not use a metal brush, damage to sealing area will result in leaks.

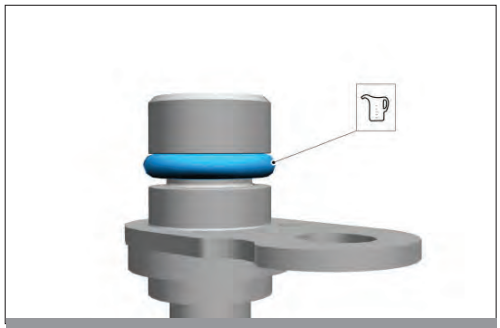
Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B



14. Connect the electrical connector, then attach the wire harness retainers.

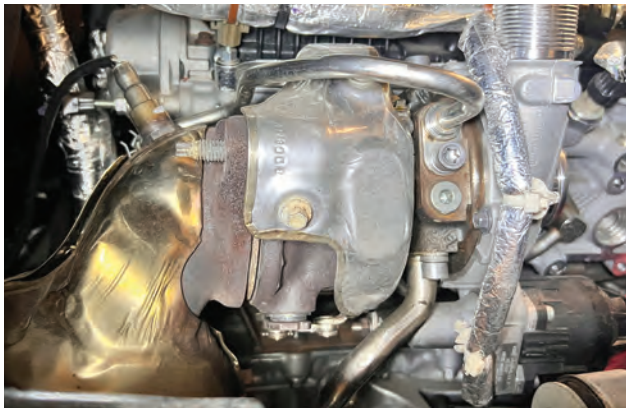


15. Install a new turbocharger coolant return tube O-ring seal, then lubricate with clean engine coolant.



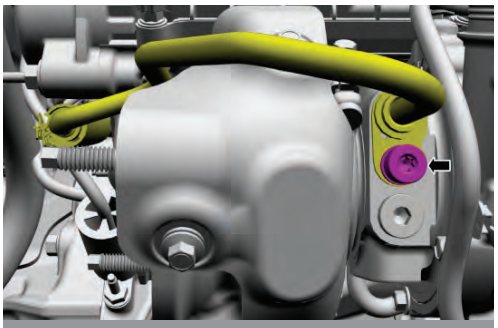
Part: FT4Z-6N652-D QTY: 1

16. Install the turbocharger coolant return tube to the turbocharger, then install and tighten the turbocharger coolant return tube bolt.



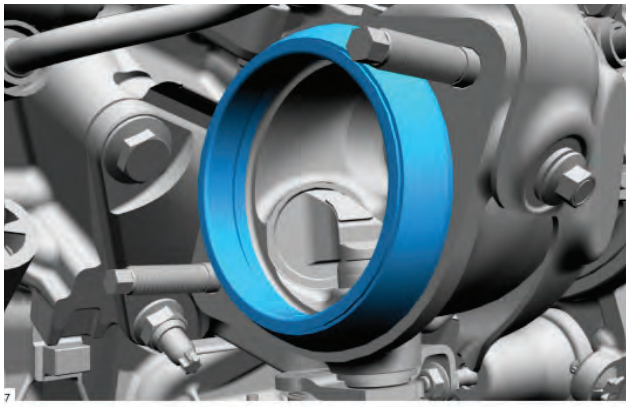
NOTICE
Do not use a metal brush, damage to sealing area will result in leaks.

Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

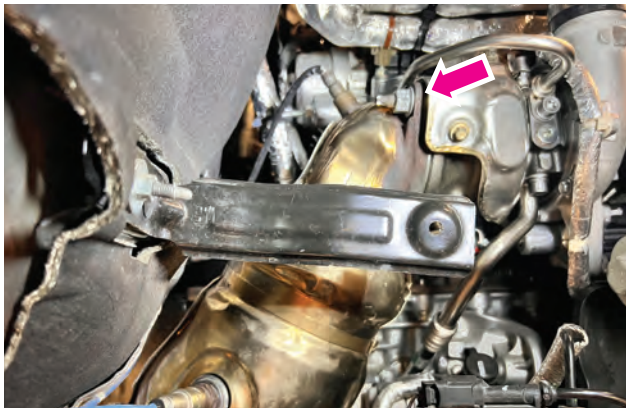


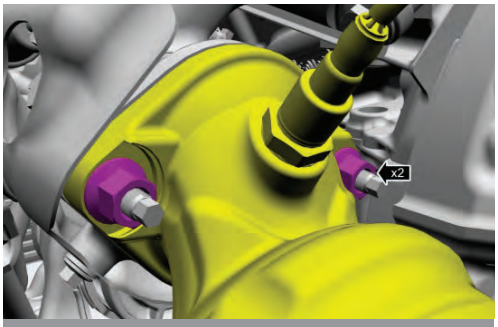
TORQUE
89 lb.in (10 Nm)

17. Install the RH turbocharger exhaust flange gasket.



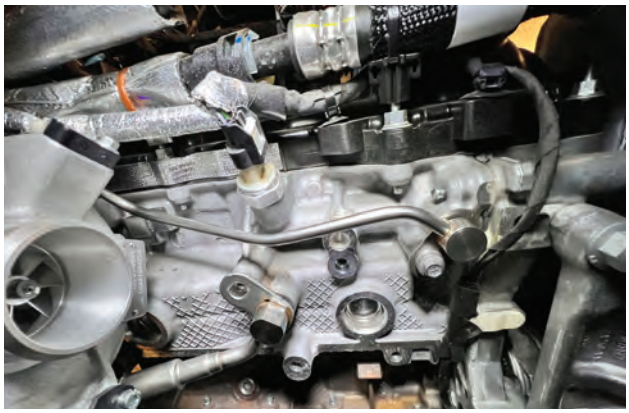
18. Install and evenly tighten the RH turbocharger exhaust flange nuts.





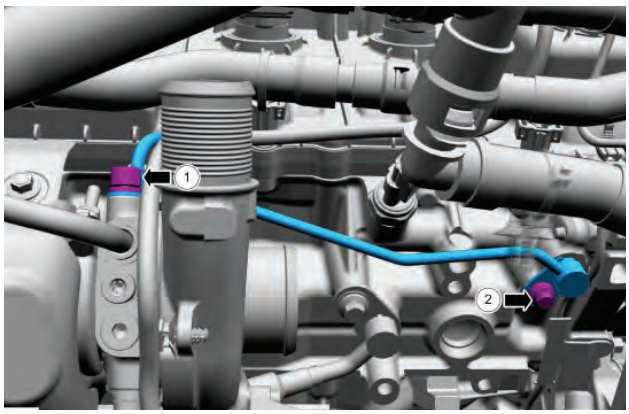
TORQUE
30 lb.ft (40 Nm)

19. Install the O-ring seals on the oil supply tube. Insert the supplied check valve in the cylinder head side of the oil supply tube and insert the oil filter in the check valve assembly. See illustration for reference. Lubricate the O-ring seals with clean engine oil.



Part: FT4Z-6N652-D QTY: 1

20. Install the turbocharger oil supply tube, then install and tighten the turbocharger oil supply tube bolts.

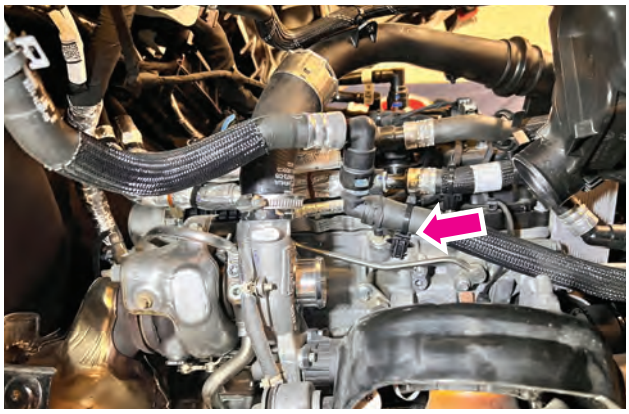


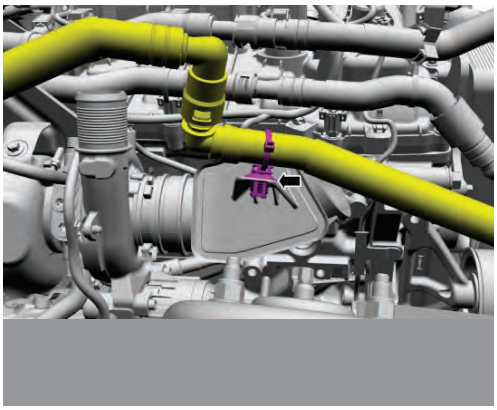
NOTICE
When installing the turbocharger oil supply tube into the engine block, use care not to damage the new turbocharger oil supply tube oil filter.

1. Do not use a metal brush; damage to sealing area will result in leaks. Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore and the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

TORQUE
Tighten 1 to: 89 lb.in (10 Nm)
Tighten 2 to: 18 lb.ft (24 Nm)

21. Attach the hose retainer.



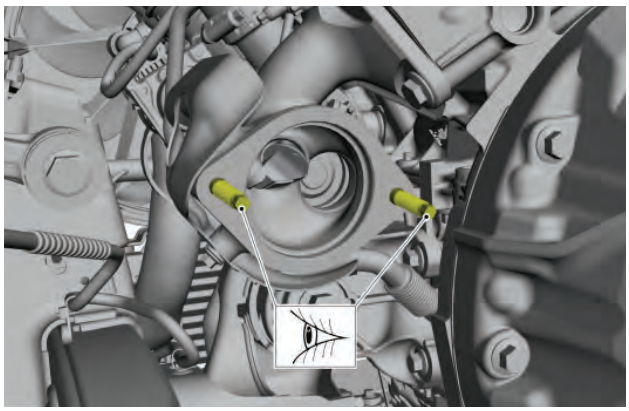


LH CATALYTIC CONVERTER INSTALL

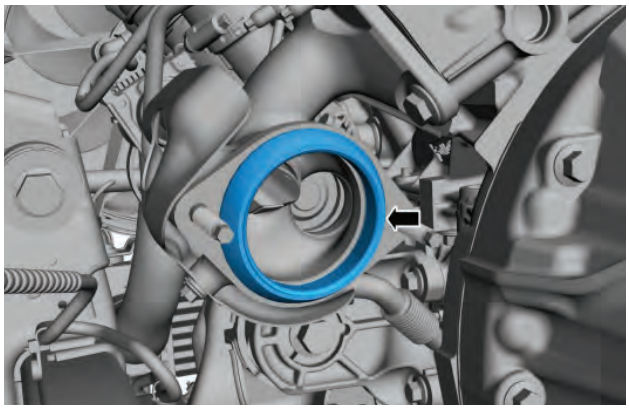
LH CATALYTIC CONVERTER INSTALL

1. Clean all exhaust connections before reassembly.

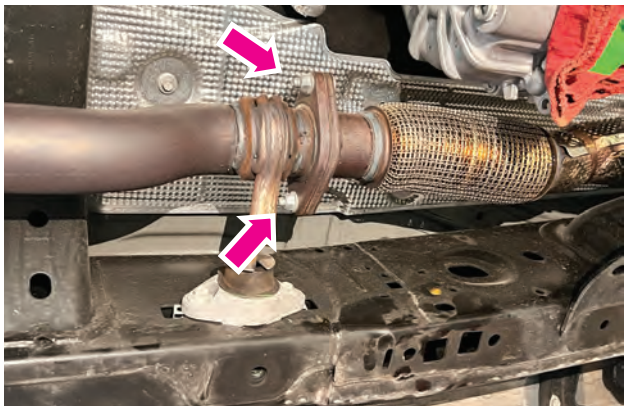
2. Clean and inspect the studs.

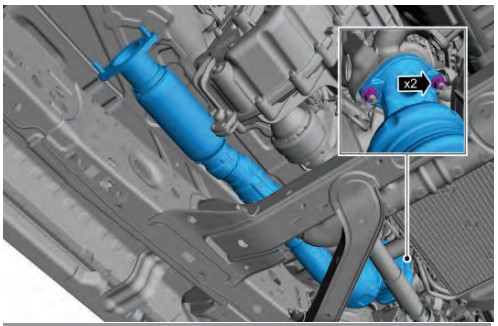


3. Inspect the gasket. Replace if necessary. Install gasket.



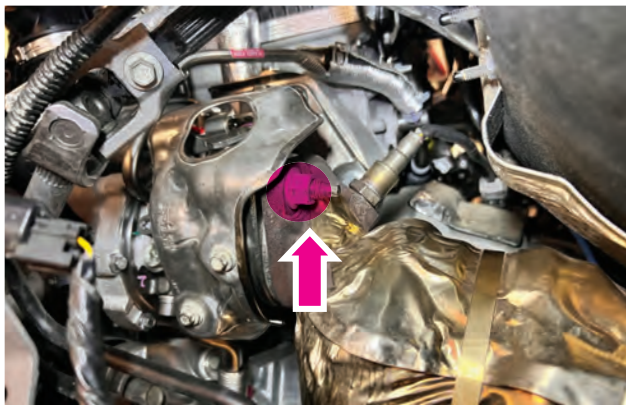
4. Position the LH catalytic converter in vehicle. Install the LH catalytic converter nuts.

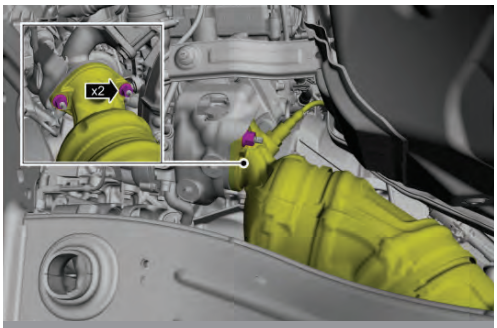




NOTE
The nuts are only finger tight at this step.

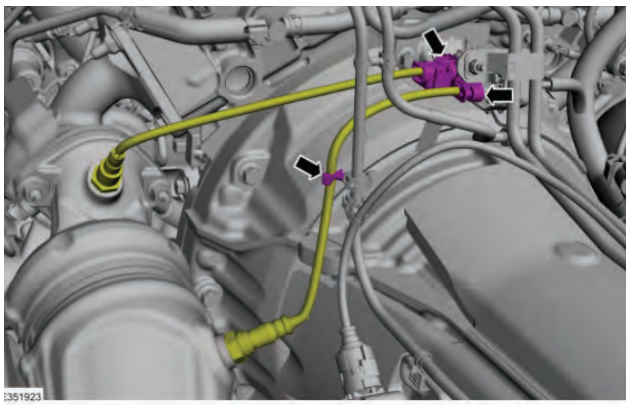
5. Tighten the catalytic converter nuts.





TORQUE
30 lb.ft (40 Nm)

6. Connect the electrical connectors and attach the wire clips.

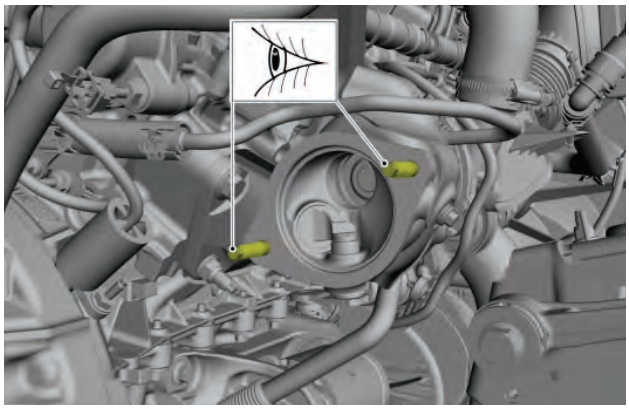


RH CATALYTIC CONVERTER INSTALL

RH CATALYTIC CONVERTER INSTALL

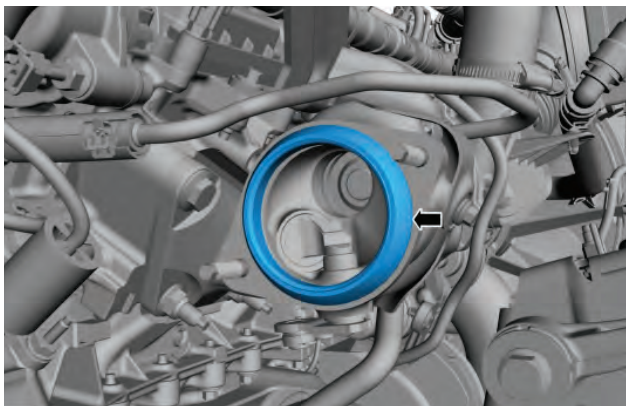
1. Clean all exhaust connections before reassembly.

2. Clean and inspect the studs.

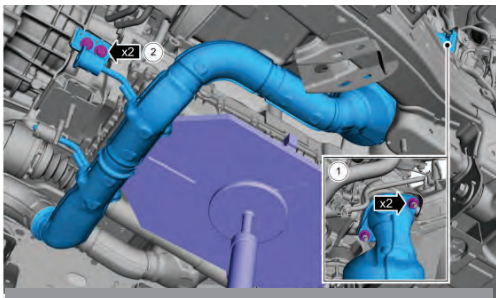


TORQUE
18 lb.ft (25 Nm)

3. Inspect the gasket. Replace if necessary. Install gasket.



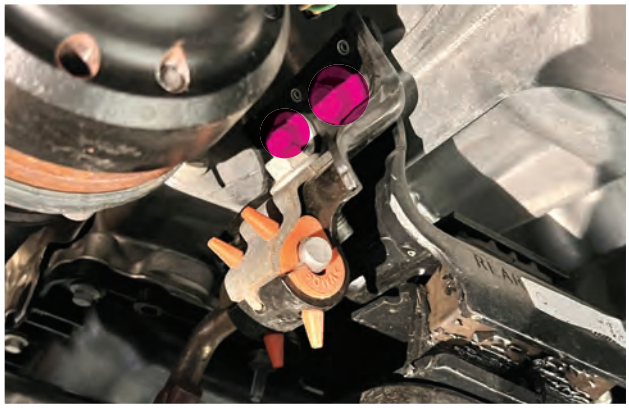
4. Position the catalytic converter assembly in the vehicle and install the nuts. Install the hanger bracket and the bolts.

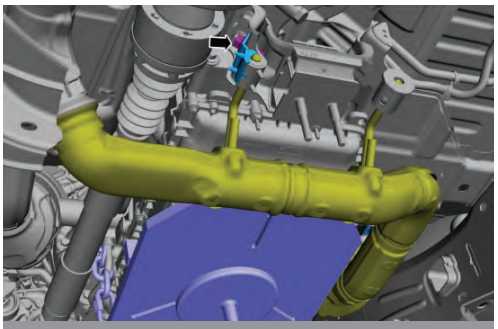


TORQUE
66 lb.ft (90 Nm)

NOTE
The nuts are only finger tight at this step.

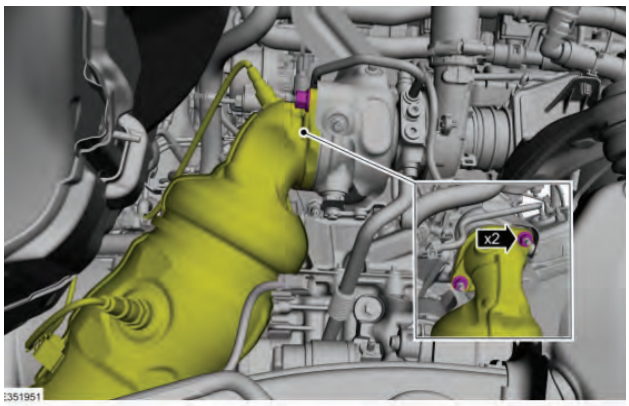
5. Install the hanger bracket and the bolt.





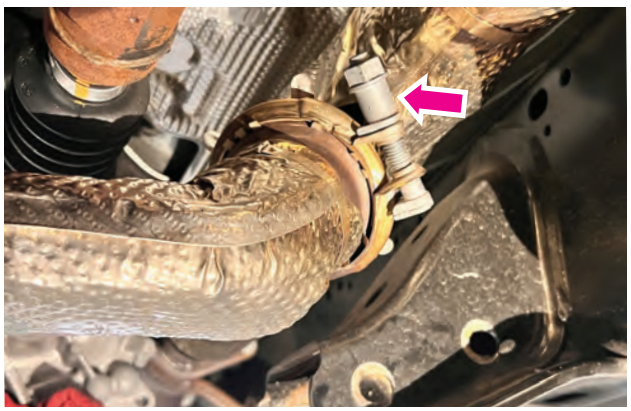
TORQUE
41 lb.ft (55 Nm)

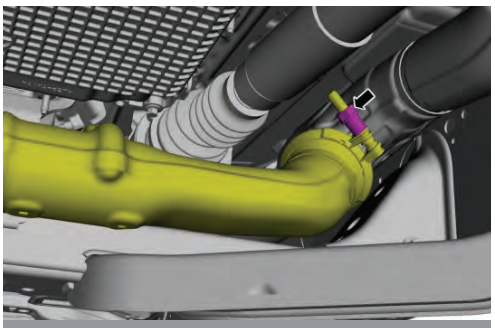
6. Tighten the RH catalytic converter nuts.



TORQUE
30 lb.ft (40 Nm)

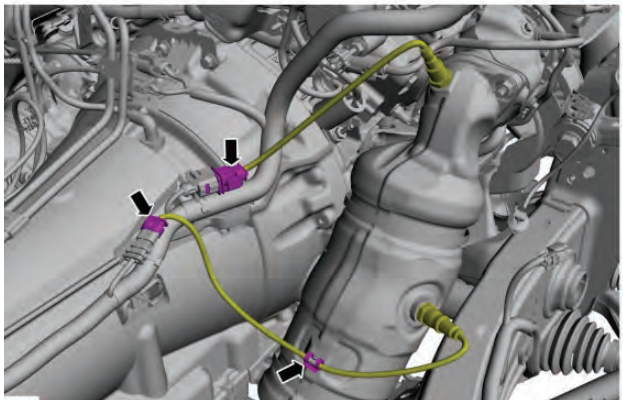
7. Position and tighten the clamp.





TORQUE
18 lb.ft (25 Nm)

8. Connect the electrical connectors and attach the wire clips.



TRANSMISSION SUPPORT CROSSMEMBER INSTALL

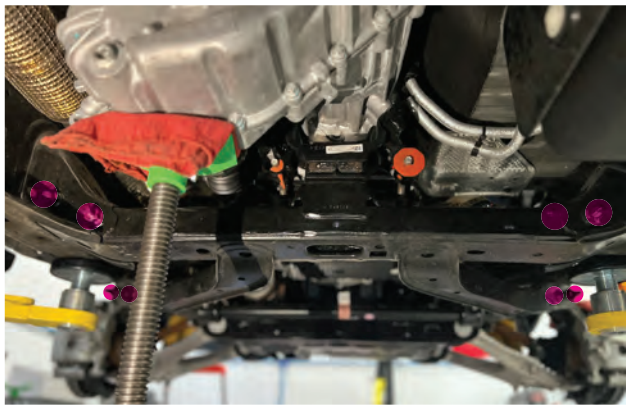
TRANSMISSION SUPPORT CROSSMEMBER INSTALL

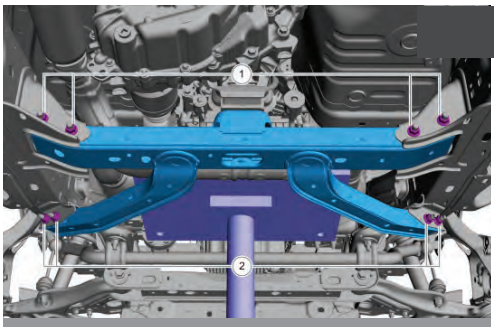
WARNING

Always secure transmission, transfer case, and axle assemblies to their service jack. Avoid obstructions while lowering and raising the jack. Improperly secured assemblies or contact with obstructions may cause the assembly to fall off the jack, which could result in serious personal injury.

NOTE
Make sure the transmission jack makes contact on the outer ribs of the transmission fluid pan.

1. Install the transmission support crossmember using the transmission support crossmember nuts.

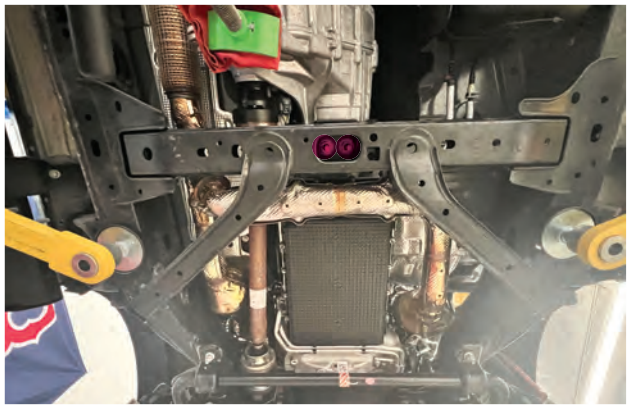


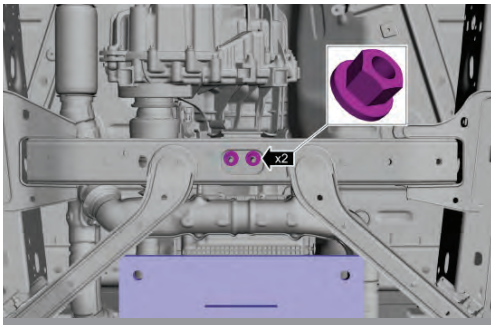


TORQUE
77 lb.ft (105 Nm)

NOTE
Install the nuts finger tight before final tightening.

2. Install the transmission mount nuts to the crossmember.



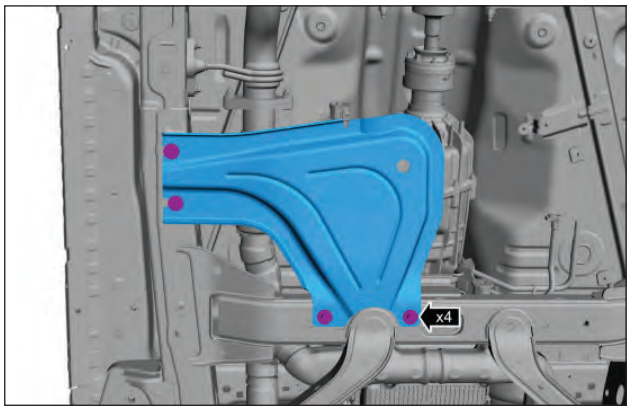


TORQUE
85 lb.ft (115 Nm)

NOTE
Install the nuts finger tight before final tightening.

Vehicles with fuel tank shield

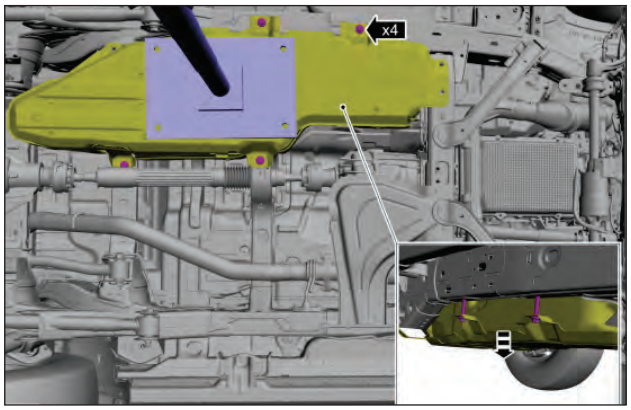
3. Install the bolts for the skid plate.



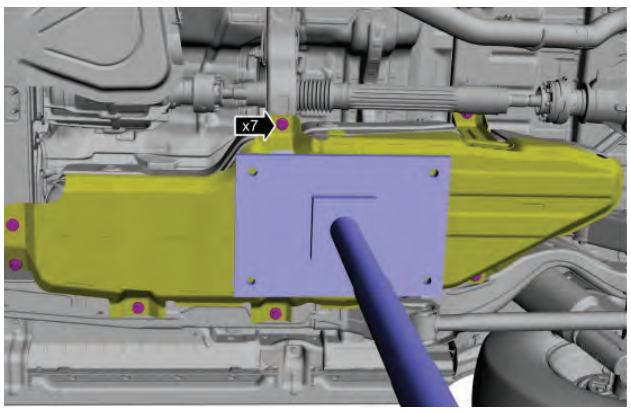
TORQUE
22 lb.ft (30 Nm)

4. Install longer bolts to support the fuel tank and shield. Lower the fuel tank on to the longer bolts and remove the transmission jack.

- Install 4 bolts to support the fuel tank and shield: M12×1.75×110
- Install the bolts to a depth to allow the fuel tank and shield to be lowered approximately 50mm.
- Lower the fuel tank slowly onto the longer bolts and remove the transmission jack.



5. Install the bolts then remove the transmission jack supporting the fuel tank and skid plate.

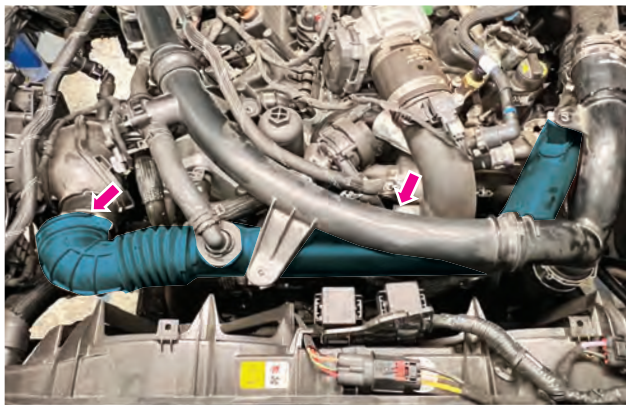


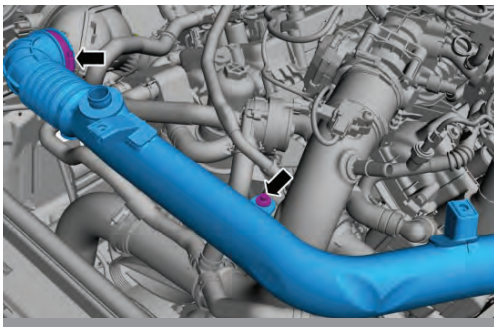
TORQUE
106 lb.in (12 Nm)

LH AIR CLEANER OUTLET PIPE INSTALL

LH AIR CLEANER OUTLET PIPE INSTALL

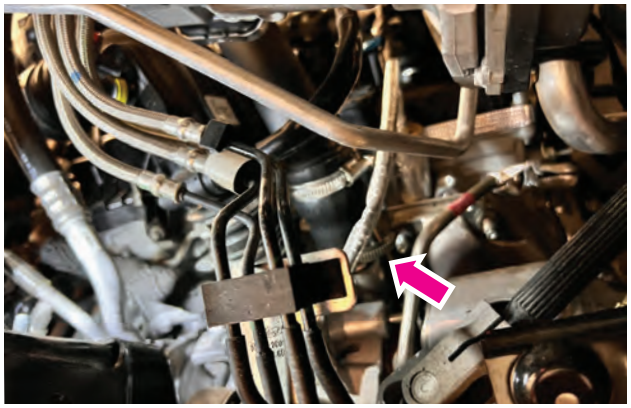
1. Install the air cleaner outlet pipe by tightening clamp and bolt.

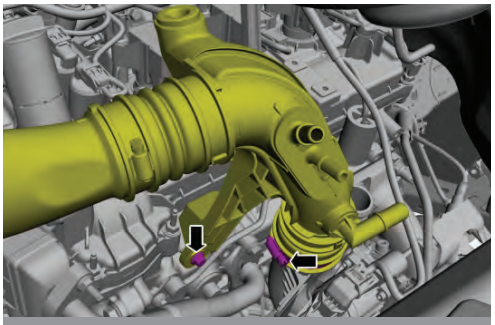




TORQUE
Clamp: 48 lb.in (5.4 Nm)
Bolt: 97 lb.in (11 Nm)

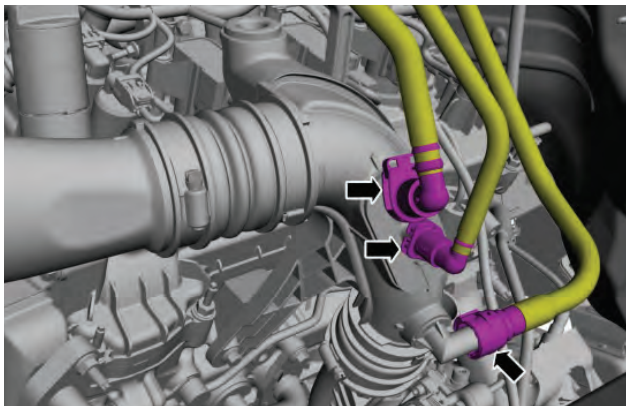
2. Tighten the clamp and bolt.





TORQUE
Clamp: 48 lb.in (5.4 Nm)
Bolt: 97 lb.in (11 Nm)

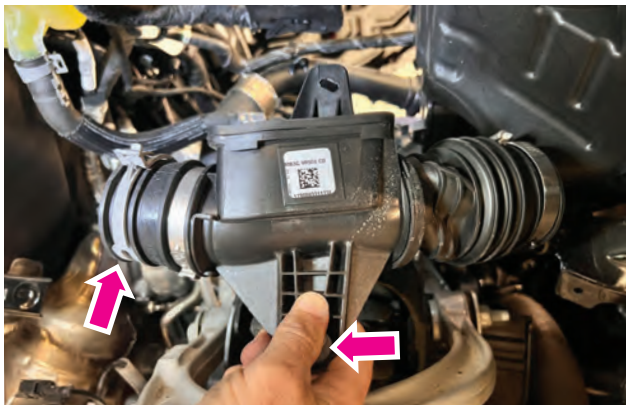
3. Connect the quick connectors.

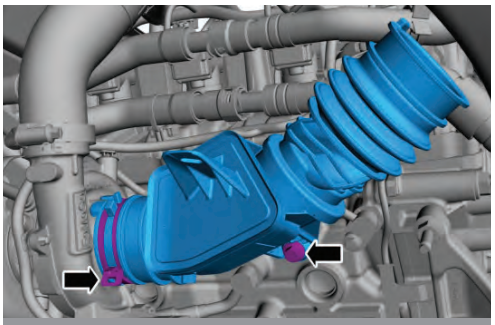


RH AIR CLEANER OUTLET PIPE INSTALL

RH AIR CLEANER OUTLET PIPE INSTALL

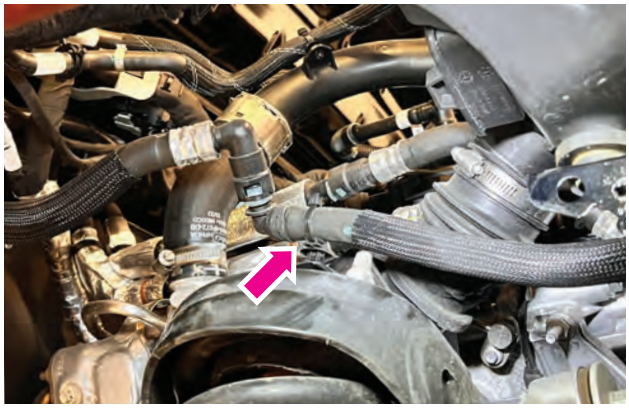
1. Install the air cleaner with the bolt and tighten the clamp.

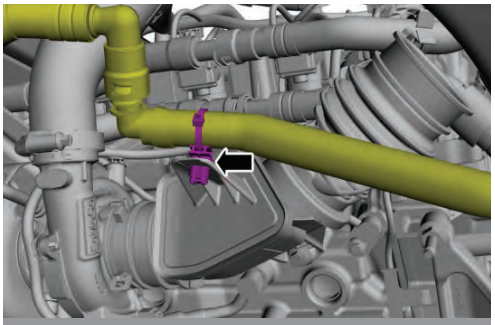




TORQUE
Bolt: 97 lb.in (11 Nm)

2. Attach the coolant hose retainer.

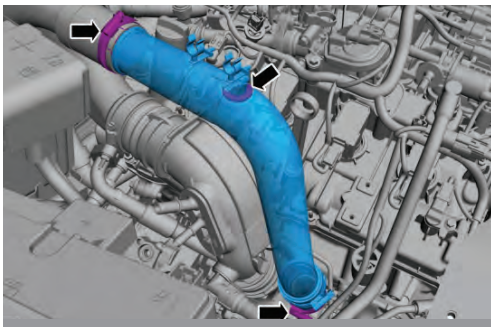




LH TURBOCHARGER OUTLET PIPE INSTALL

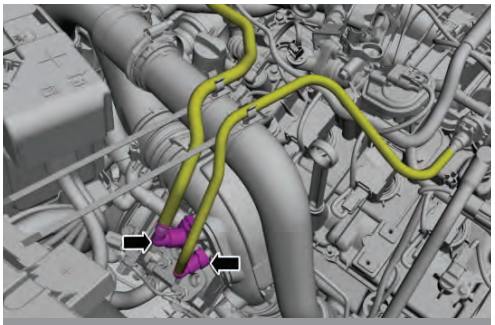
LH TURBOCHARGER OUTLET PIPE INSTALL

1. Install the pipe by tightening the clamp and attaching the grommet.



TORQUE
48 lb.in (5.4 Nm)

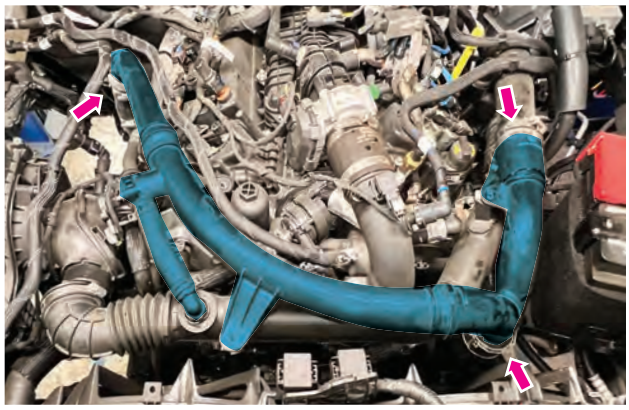
2. Connect the quick connectors.

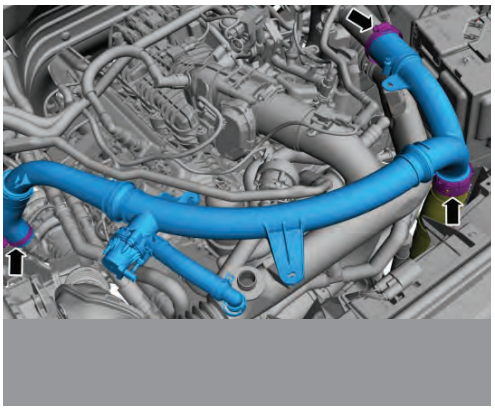


RH TURBOCHARGER OUTLET PIPE INSTALL

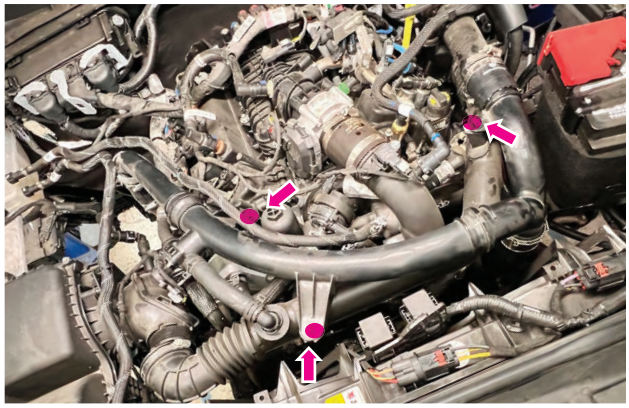
RH TURBOCHARGER OUTLET PIPE INSTALL

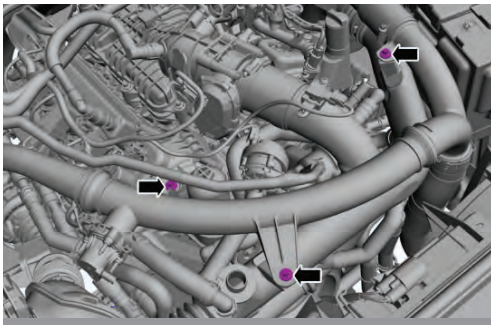
1. Install the pipe by tightening the clamps and attaching the quick connect clip.





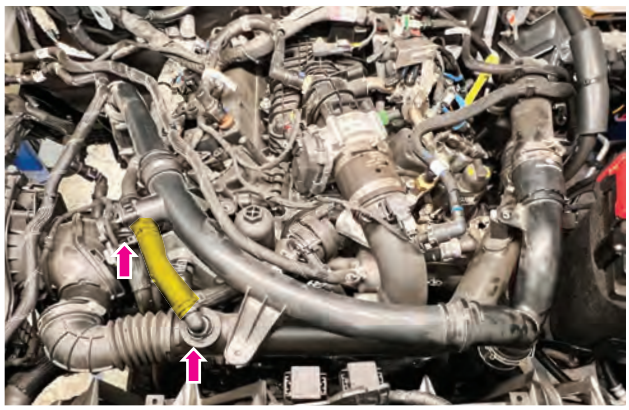
2. Install the bolts.

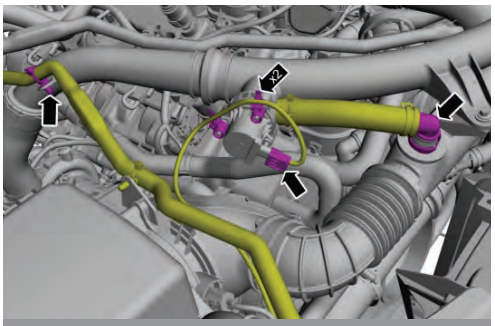




TORQUE
97 lb.in (11 Nm)

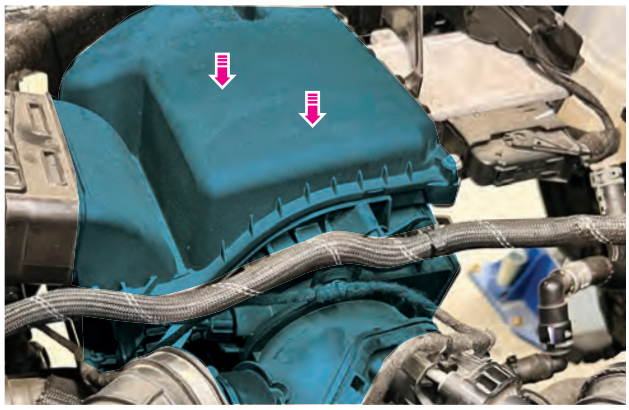
3. Connect the electrical connector and attach the retainer clips. Connect the quick connector.

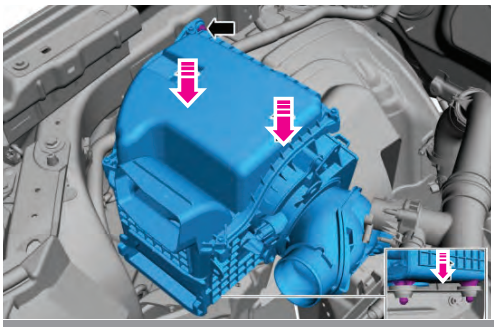




AIR CLEANER INSTALL

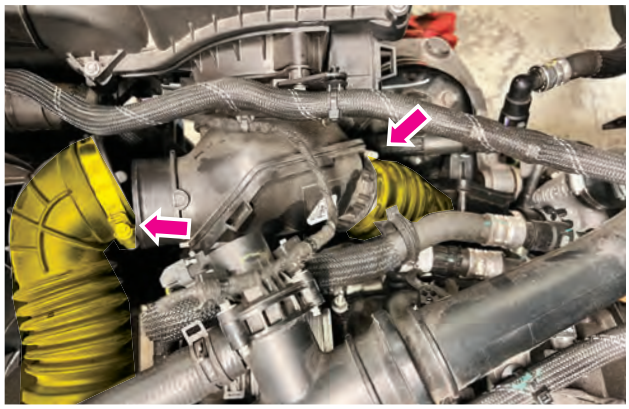
1. Slide the air cleaner down and attach the bolt and isolator.

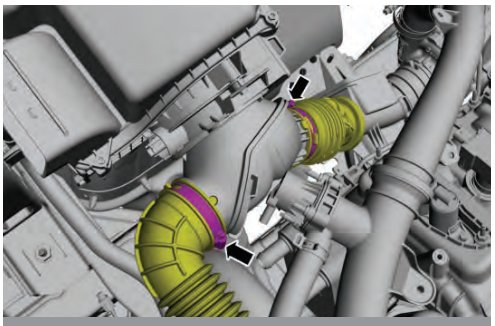




TORQUE
97 lb.in (11 Nm)

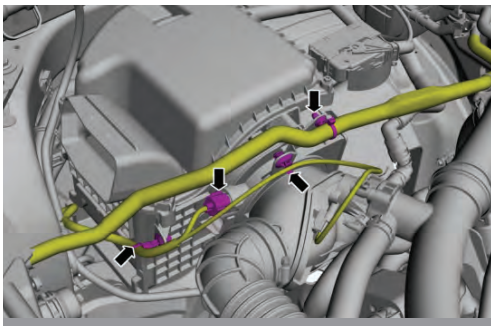
2. Attach the hoses by tightening the clamps.



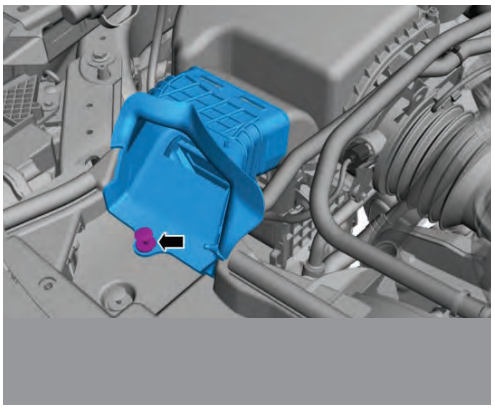


TORQUE
48 lb.in (5.4 Nm)

3. Connect the electrical connector and attach the retainer clips.



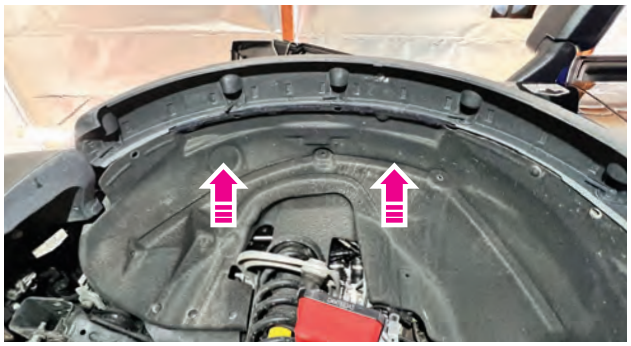
4. Install the air intake duct with the fastener.



FRONT FENDER SPLASH SHIELDS INSTALL

FRONT FENDER SPLASH SHIELDS INSTALL

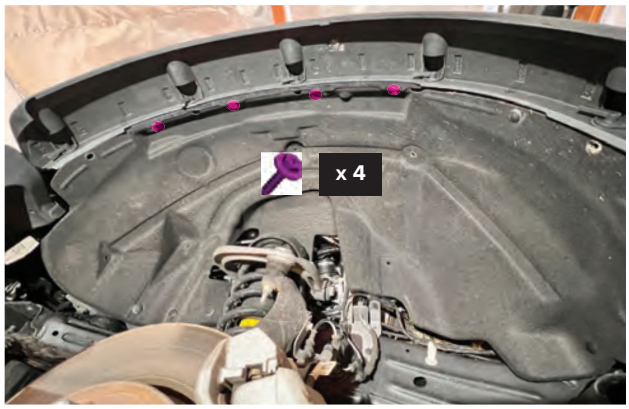
1. Slide the fender splash shield up into position.



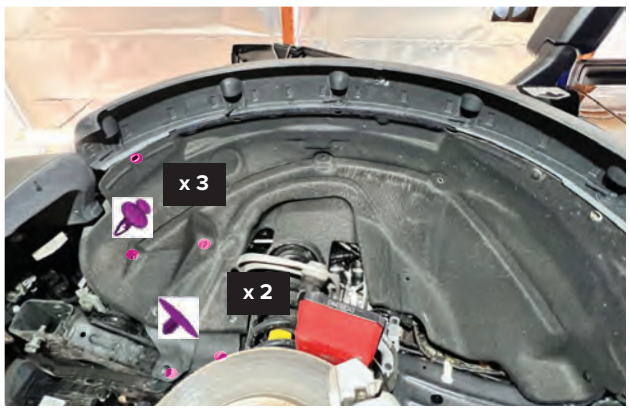
NOTE
LH side shown,
RH side similar.

2. Insert the pin type retainers.

3. Attach the screws. (7mm)

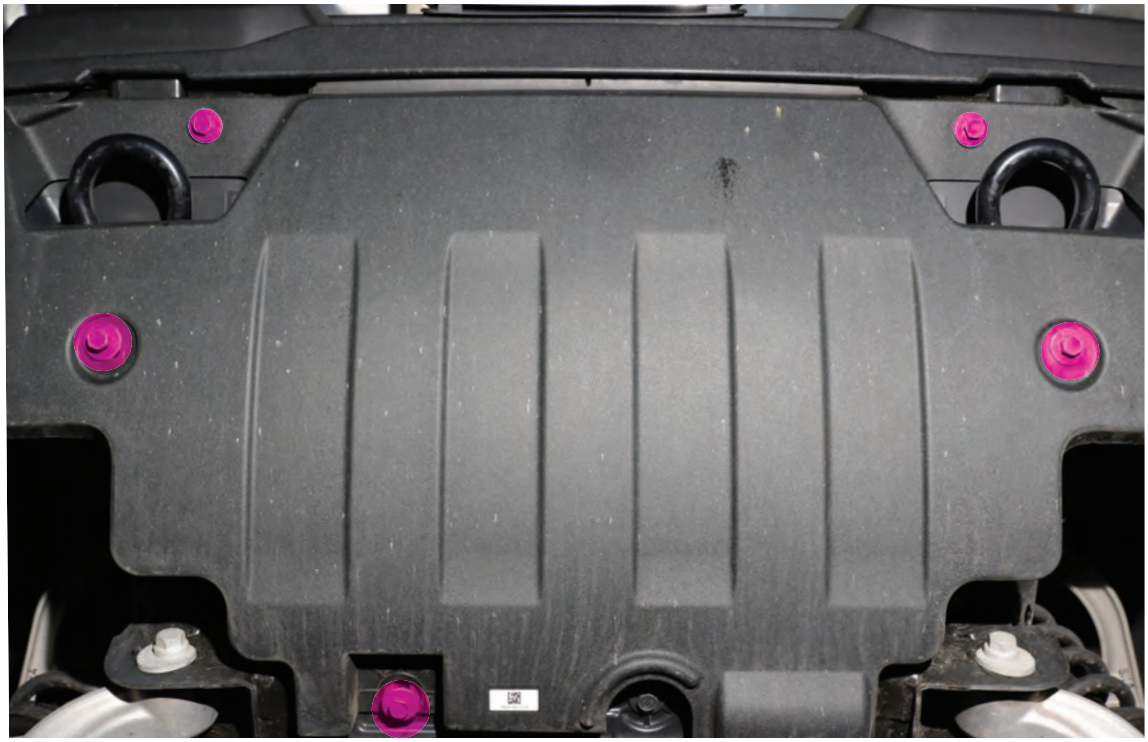


4. Attach the push pins and pin type retainers.

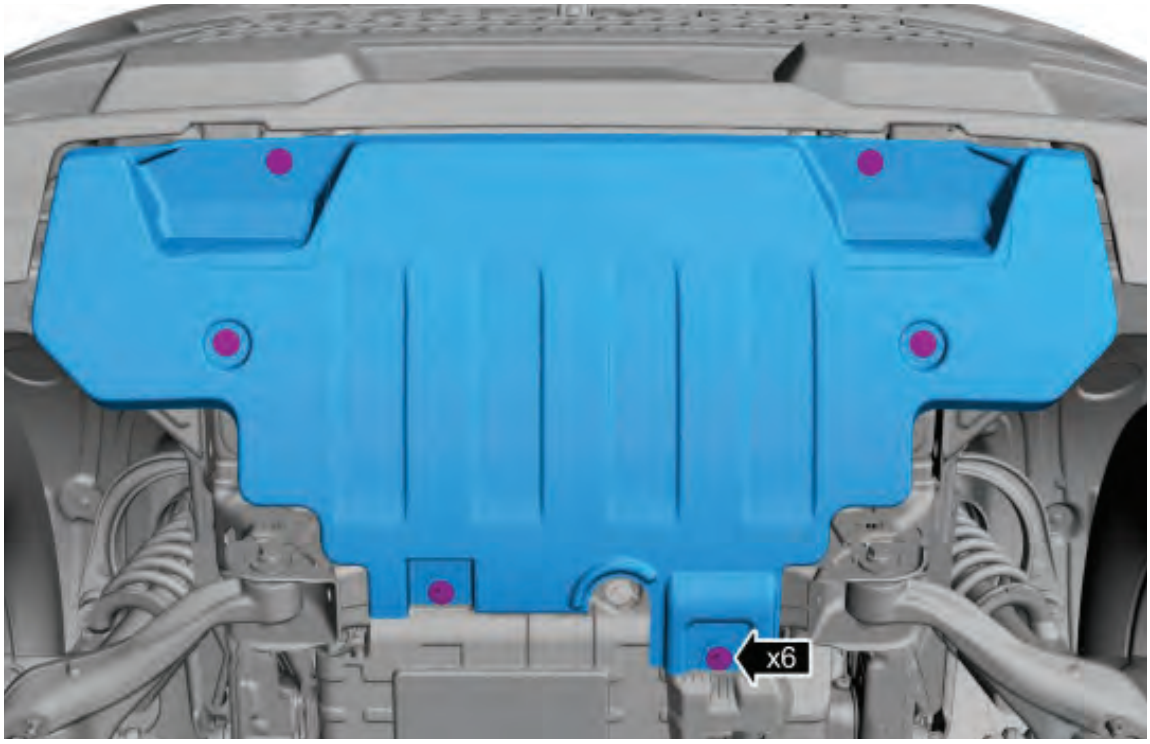


ENGINE UNDERSHIELD INSTALL

1. Install the bolts and the engine front undershield.

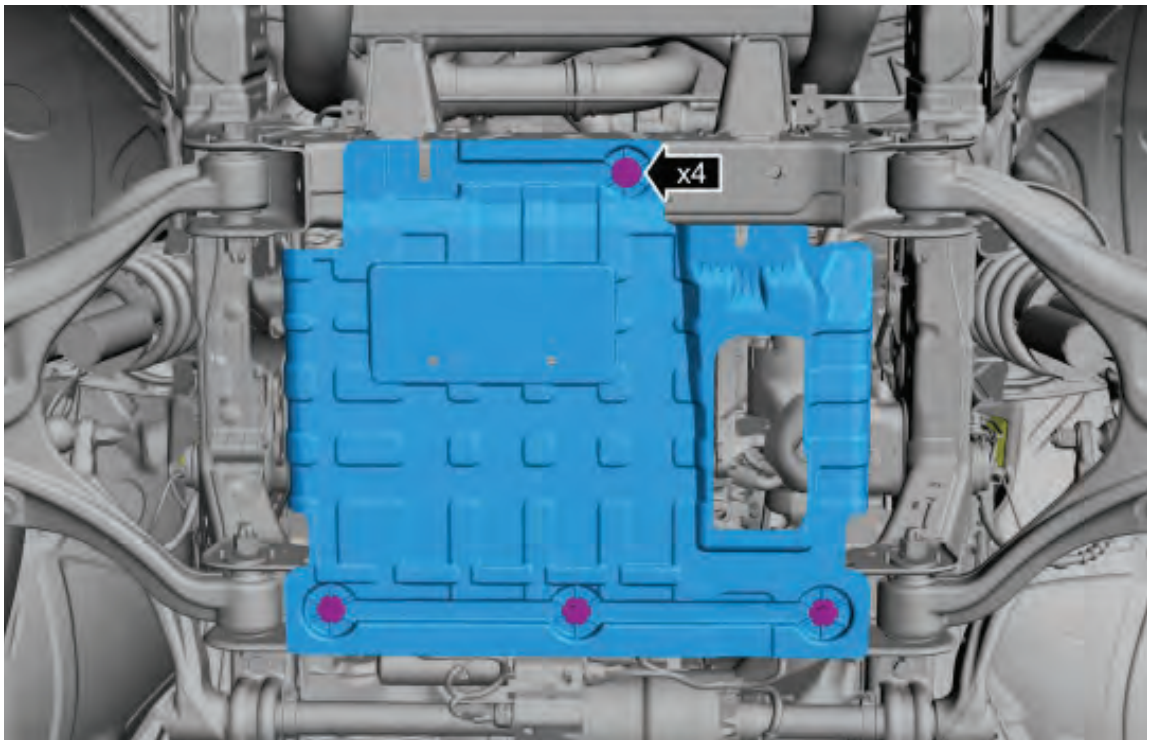


NOTE
Torque: 124 lb.in (14 Nm)
15mm bolts



Vehicles with rear engine undershield

1. Install the bolts and the engine rear undershield.



NOTE
Torque: 124 lb.in (14 Nm)
15mm bolts

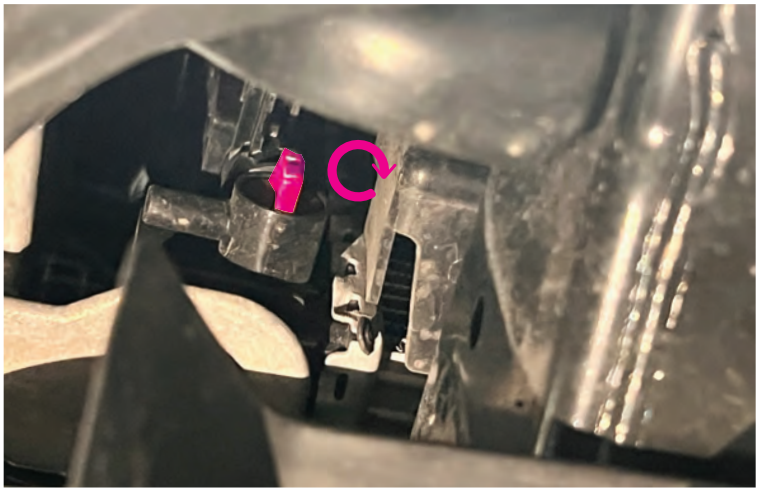
FILL THE COOLING SYSTEM

FILL THE COOLING SYSTEM

1. When adding or topping off the engine coolant:

- Measure the coolant concentration in the vehicle.
- Determine the concentration desired based on the vehicle duty cycle operating conditions (non-extreme climate, extreme hot, or extreme cold).
- Add, top-off or adjust the coolant to the correct concentration.

2. Close the radiator valve.



3. Install the vacuum cooling system filler and follow the manufacturer's instructions to fill and bleed the system.

4. Fill the degas bottle to the MAX FILL line.

5. Install the degas bottle cap until it contacts the hard stop.

6. Turn the climate control system off.

7. Start the engine and increase the engine speed to 3,500 rpm and hold for 30 seconds.

8. Turn the engine off and wait for 1 minute to purge any large air pockets from the cooling system.

9. **WARNING:** Always allow the engine to cool before opening the cooling system. Do not unscrew the coolant pressure relief cap when the engine is operating or the cooling system is hot. The cooling system is under pressure; steam and hot liquid can come out forcefully when the cap is loosened slightly. Failure to follow these instructions may result in serious personal injury.

10. Check the engine coolant level in the degas bottle and, if necessary, fill to the top of the MAX FILL line.

11. Start the engine and let it idle until the engine reaches normal operating temperature and the thermostat is fully open. A fully open thermostat is verified by the cooling fan cycling on at least once.

12. Increase the engine speed to 3,500 rpm and hold for 30 seconds.

13. Allow the engine to idle for 30 seconds.

14. Turn the engine off for 1 minute.

NOTICE

Use the correct coolant. Do not mix coolant types. Mixing coolant types may degrade the coolant corrosion protection and may damage the engine or cooling system. For the correct coolant specified for this vehicle, refer to Specifications.

Engine coolant provides boil protection, corrosion protection, freeze protection, and cooling efficiency to the engine and cooling components. In order to obtain these protections, maintain the engine coolant at the correct concentration and fluid level in the degas bottle.

Do not add alcohol, methanol, or brine, or any engine coolants mixed with alcohol or methanol antifreeze. These can cause engine damage from overheating or freezing.

Make sure that the concentration of antifreeze is not below 40% or above 60% as engine parts could become damaged.

Vehicles without auxiliary heating

For a total of 5 times to remove any remaining air trapped in the system.

1. Start the engine and let it idle until the engine reaches normal operating temperature and the thermostat is fully open. A fully open thermostat is verified by the cooling fan cycling on at least once.

2. Increase the engine speed to 3,500 rpm and hold for 30 seconds.

3. Allow the engine to idle for 30 seconds.

4. Turn the engine off for 1 minute.

Vehicles with auxiliary heating

For a total of 10 times to remove any remaining air trapped in the system.

1. Start the engine and let it idle until the engine reaches normal operating temperature and the thermostat is fully open. A fully open thermostat is verified by the cooling fan cycling on at least once.

2. Increase the engine speed to 3,500 rpm and hold for 30 seconds.

3. Allow the engine to idle for 30 seconds.

4. Turn the engine off for 1 minute.

All vehicles

WARNING

Always allow the engine to cool before opening the cooling system. Do not unscrew the coolant pressure relief cap when the engine is operating or the cooling system is hot. The cooling system is under pressure; steam and hot liquid can come out forcefully when the cap is loosened slightly. Failure to follow these instructions may result in serious personal injury.

1. Check the engine coolant level in the degas bottle and, if necessary, fill to the top of the MAX FILL line on the degas bottle.

2. Install the pressure relief cap until it contacts the hard stop.

FINAL STEPS

1. Check and top off engine oil.

Motorcraft® SAE 5W-30 Synthetic Blend Motor Oil

XO-5W30-Q1SP

Specification

WSS-M2C961-A1

Fill capacity

Initial fill 7.5 qt (7.10 L)

2. Start and check for leaks.
3. Road test.