

SECTION 303-04D Fuel Charging and Controls — Turbocharger

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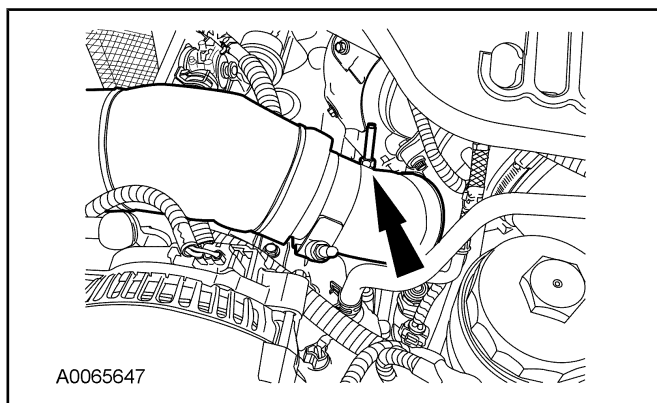
Turbocharger

Material

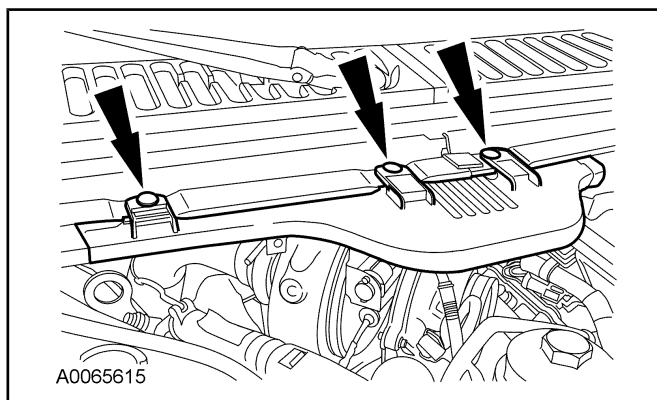
Item	Specification
SAE 15W-40 Superduty Motor Oil XO-15W-40-QSD or equivalent	WSS-M2C171-D
High Temperature Nickel Anti-Seize Lubricant XL-2	ESE-M12A4-A

Removal

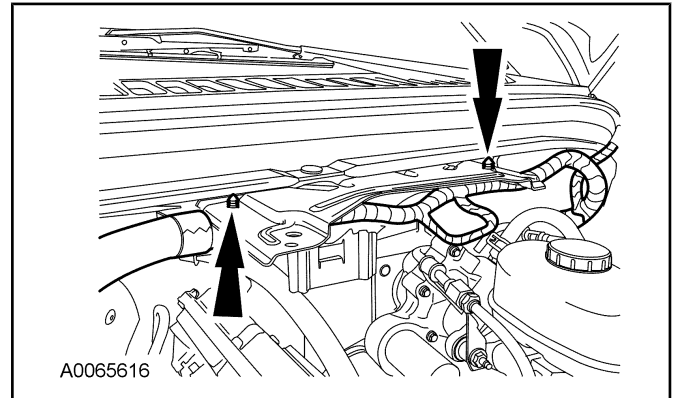
1. Remove the turbocharger intake tube. For additional information, refer to Turbocharger Intake Tube in this section.
2. Disconnect the charge air cooler (CAC) inlet pipe.



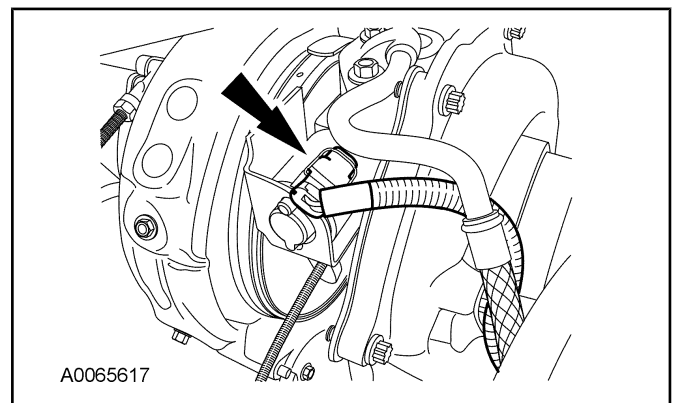
3. Remove the push pins.



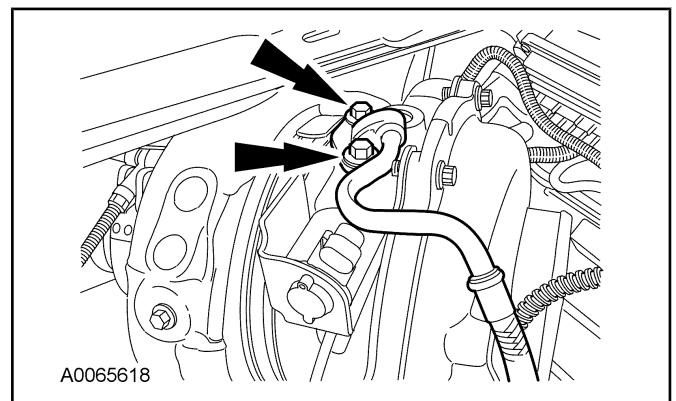
4. Disconnect the 2 wiring harness push pins and position aside.



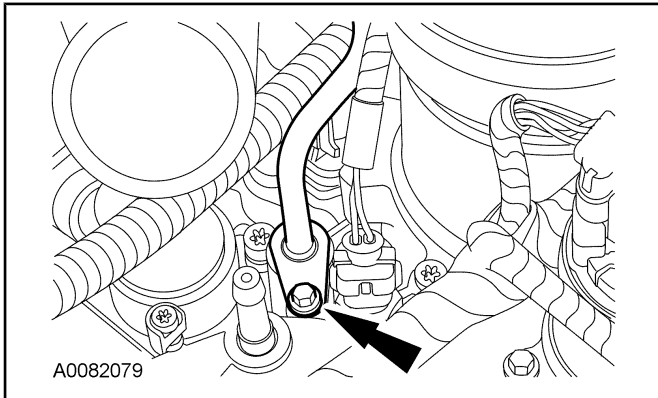
5. Disconnect the turbocharger variable vane hydraulic control valve electrical connector.



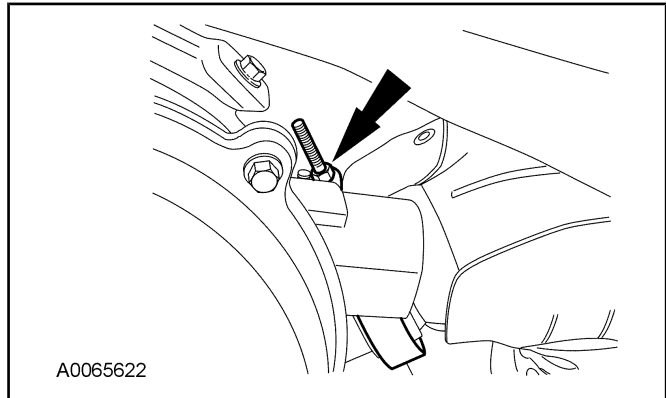
6. Remove the bolts for the oil supply tube.
 - Remove and discard the gasket.



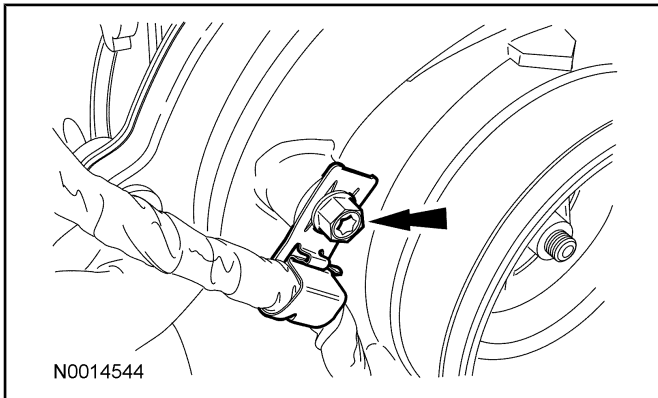
7. Remove the bolt and turbocharger oil supply tube.
 - Remove and discard the O-ring.

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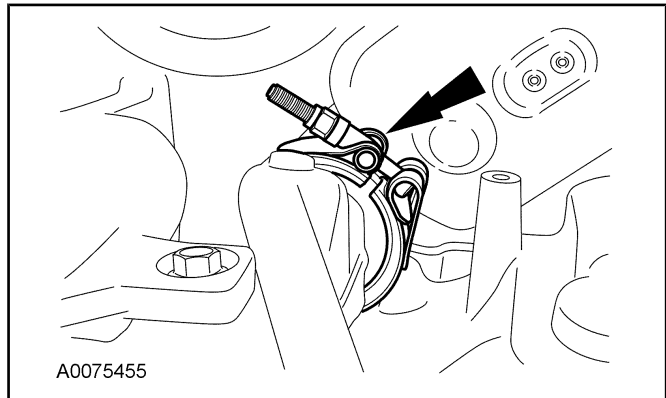
8. Remove the bolt and the wire retainer.



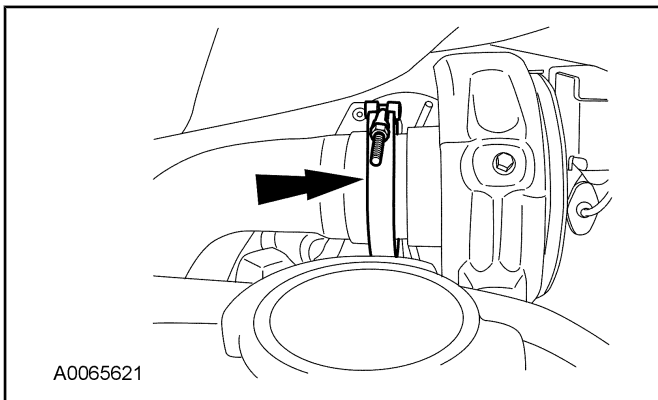
11. Loosen the exhaust inlet pipe-to-EGR cooler clamp.



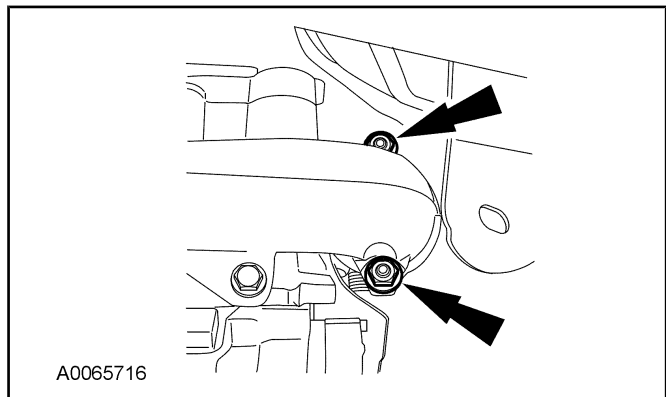
9. Remove the marmon clamp from the turbocharger outlet.



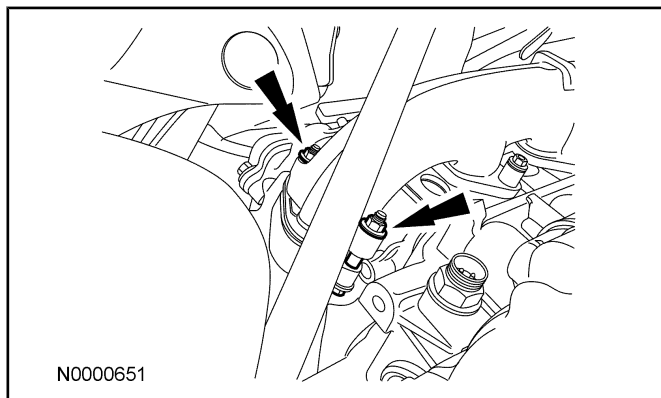
12. Loosen the LH exhaust inlet pipe-to-exhaust manifold nuts.



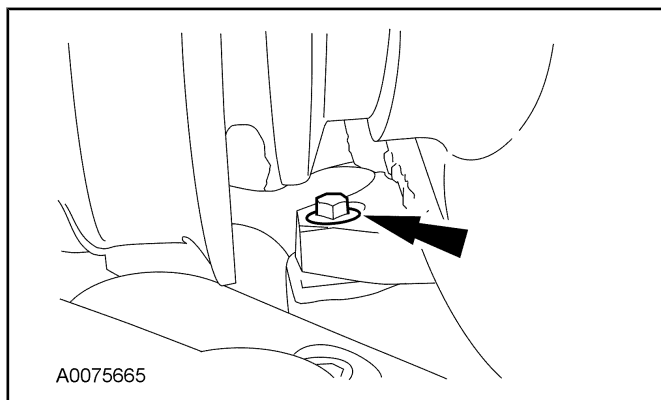
10. Remove the marmon clamp from the turbocharger inlet.



13. Loosen the RH exhaust inlet pipe-to-exhaust manifold nuts.

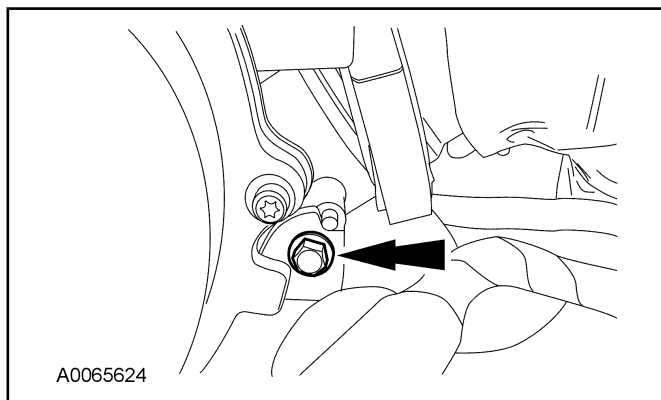
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14. Remove the rear turbocharger mounting bolt.

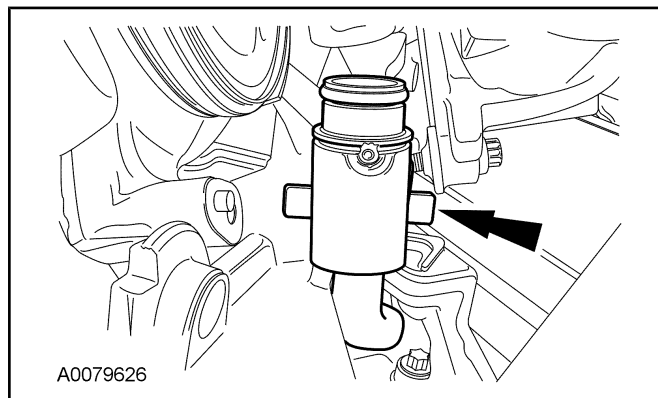


15. **NOTE:** Left side shown, right side similar.

Remove the front mounting bolts.



16. Position the turbocharger and remove the turbocharger drain tube.
- Remove and discard the drain tube O-rings.



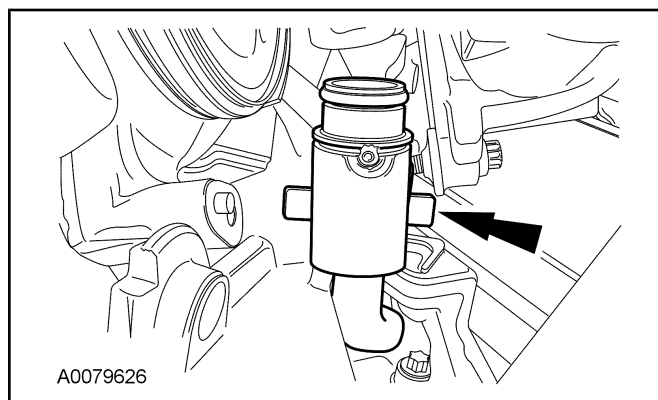
17. Remove the turbocharger.

Installation

- Position the turbocharger on the turbocharger pedestal.
 - Place the turbocharger onto the mounting bracket. Make sure the exhaust inlet pipe is correctly aligned to the turbocharger. If it is not, loosen the mounting bracket and reposition the turbocharger and mounting bracket for correct alignment. Complete the turbocharger installation.

- NOTE:** Install new O-rings and apply clean engine oil.

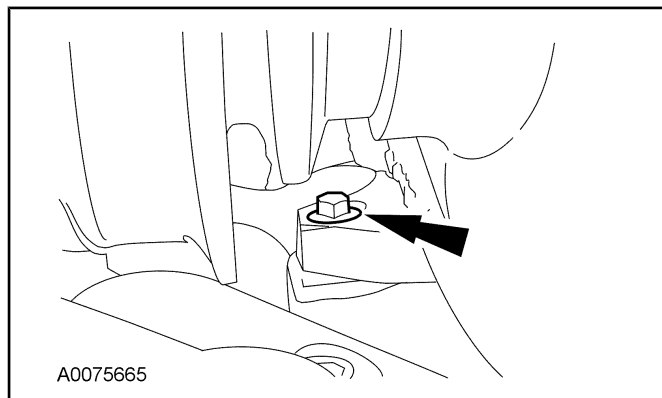
Position the turbocharger and install the turbocharger drain tube.



- NOTE:** Apply High Temperature Nickel Anti-Seize Lubricant to the bolt threads prior to installation.

Install the turbocharger and the rear mounting bolt.

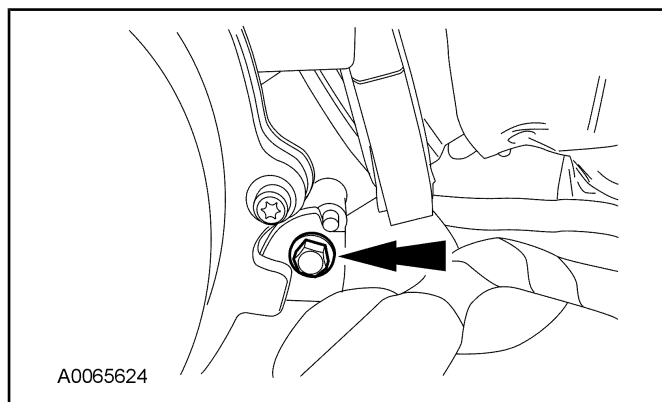
- Tighten to 31 Nm (23 lb-ft).

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4. **NOTE:** Apply High Temperature Nickel Anti-Seize Lubricant to the bolt threads prior to installation.

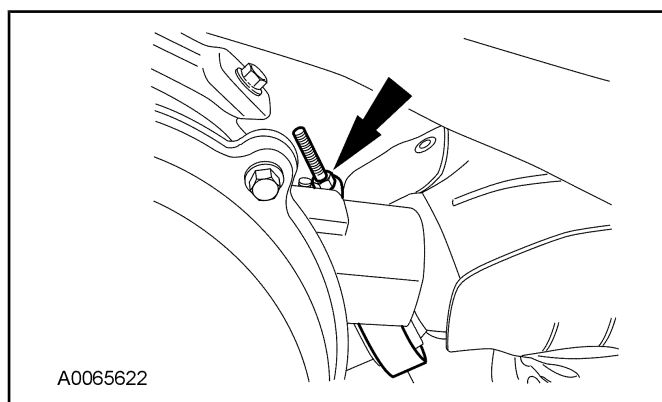
Install the turbocharger front mounting bolts.

- Tighten to 31 Nm (23 lb-ft).



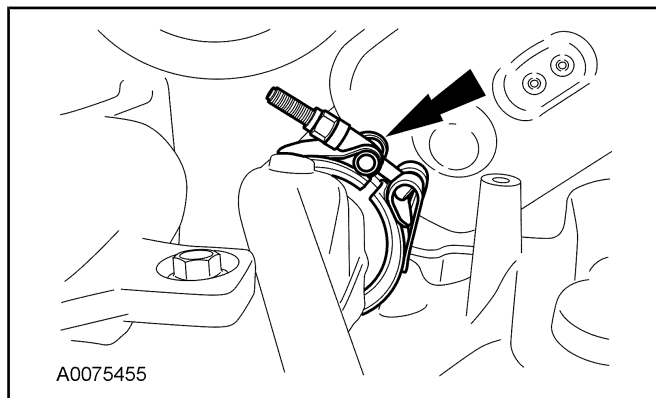
5. Install the turbocharger inlet manifold clamp.

- Tighten to 12 Nm (9 lb-ft).

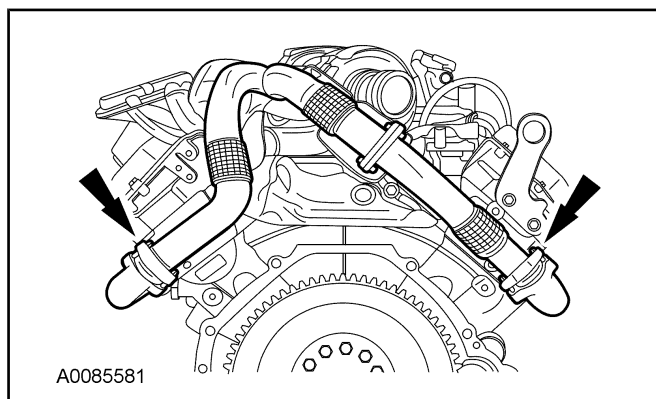


6. Position the clamp and tighten to specification.

- Tighten to 6 Nm (53 lb-in).



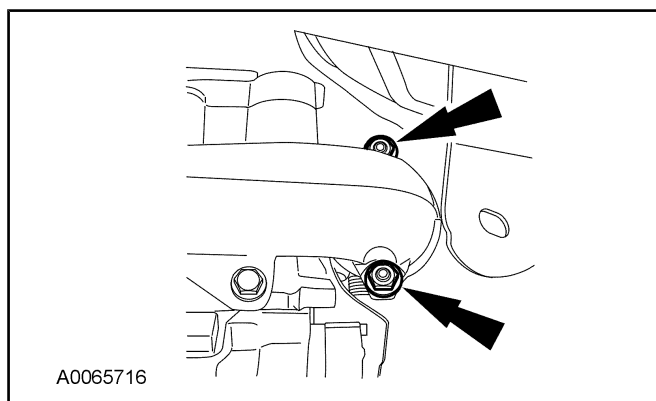
7. Make sure the exhaust inlet pipe is correctly aligned to the exhaust manifolds. Using hand tools, alternately tighten the nuts to draw the pipe to the exhaust manifold. There should be an equal gap spacing between the pipe flange and the exhaust manifold flange at the top and bottom bolts.



8. **NOTE:** LH side shown, RH side similar.

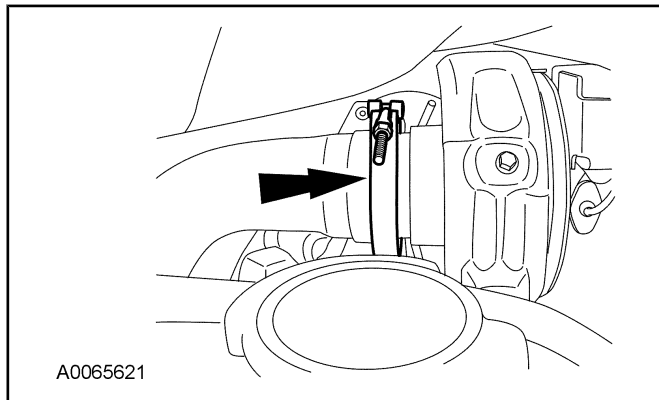
Alternately tighten the exhaust inlet pipe-to-exhaust manifold nuts to specification.

- Tighten to 27 Nm (20 lb-ft).

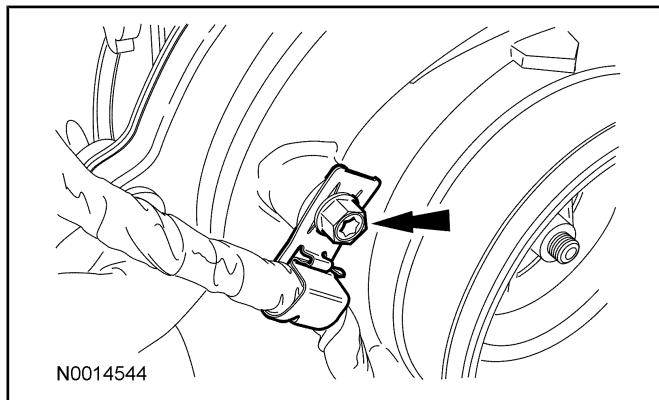


9. Install the turbocharger exhaust manifold clamp.

- Tighten to 10 Nm (89 lb-in).

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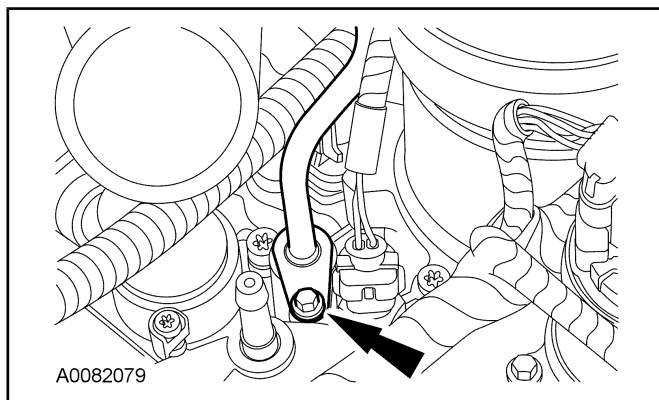
10. Position the wire retainer and install the bolt.



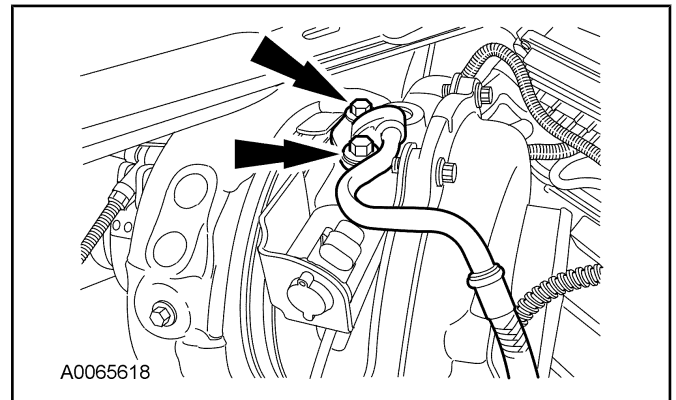
11. **NOTE:** Install a new O-ring and apply clean engine oil.

Install the oil supply tube, position the locking bracket and install the bolt.

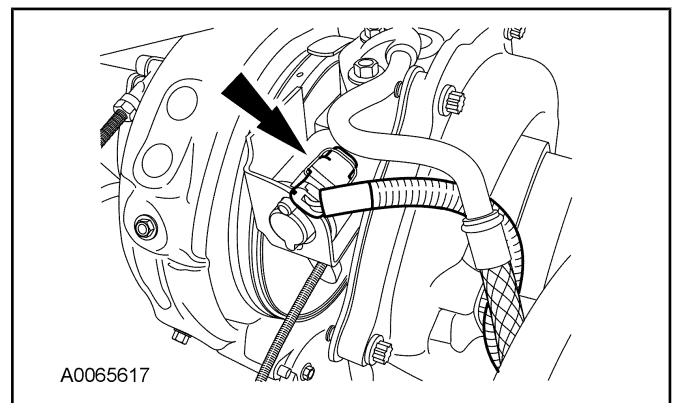
- Tighten to 10 Nm (89 lb-in).



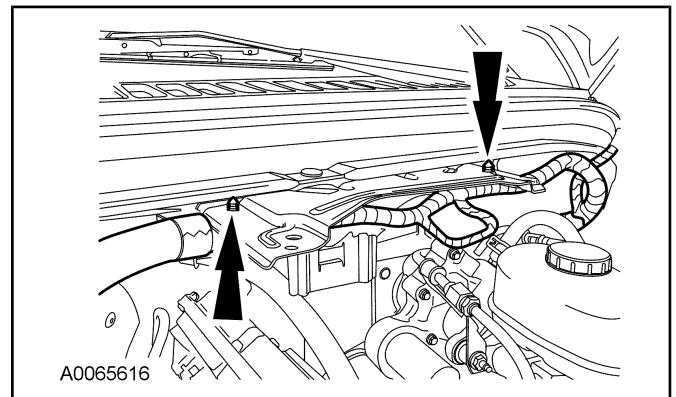
12. Prelubricate the oil inlet hole of the turbocharger assembly with clean engine oil and spin the compressor wheel several times to coat the bearing with oil.
13. Install a new oil feed tube gasket, the oil feed tube and the 2 bolts.
- Tighten to 23 Nm (17 lb-ft).



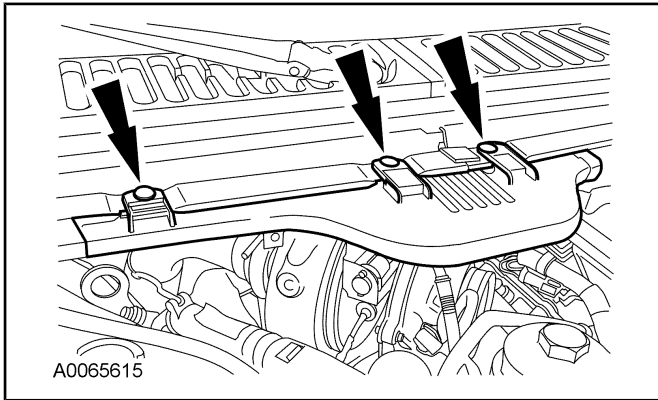
14. Connect the turbocharger variable vane hydraulic control valve electrical connector.



15. Position the wiring harness and connect the push pins.



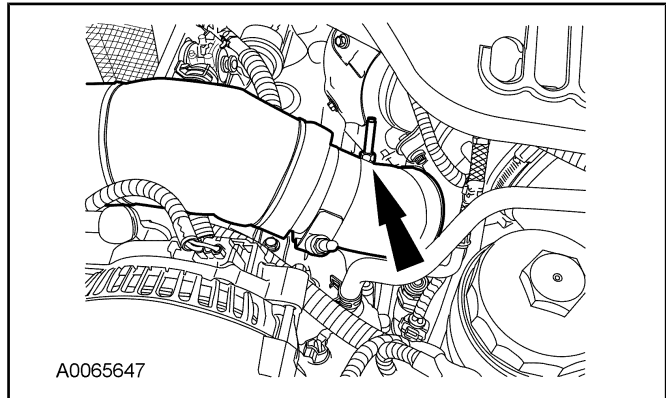
16. Install the push pins.

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17. **NOTE:** If there is any oil residue, clean both connecting ports and the inside surface of the charge air cooler pipe to prevent the pipe from blowing off.

Connect the CAC inlet pipe.

- Tighten to 12 Nm (9 lb-ft).



18. Install the turbocharger intake tube. For additional information, refer to Turbocharger Intake Tube in this section.