
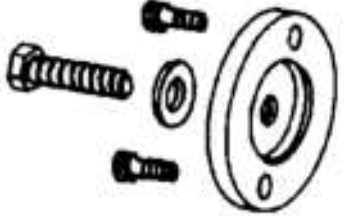


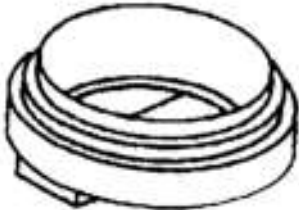

# INSTALLATION

## ENGINE

 A technical drawing of a modular engine lift bracket, showing a long metal bar with various mounting points and a central pivot mechanism.	<p>Modular Engine Lift Bracket 303-F047 (014-00073) or equivalent</p>
 A technical drawing showing the components for a crankshaft rear oil seal: a large circular seal, a smaller circular gasket, a bolt, and two nuts.	<p>Installer, Crankshaft Rear Oil Seal 303-518 (T95P-6701-DH)</p>

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**Fig. 559: Identifying Special Tools (1 Of 2)**  
Courtesy of FORD MOTOR CO.

	<p>Installer, Crankshaft Rear Oil Seal 303-516 (T95P-6701-BH)</p>
	<p>Installer, Crankshaft Rear Oil Slinger 303-517 (T95P-6701-CH)</p>

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**Fig. 560: Identifying Special Tools (1 Of 2)**  
Courtesy of FORD MOTOR CO.

Item	Specification
<p>Metal Surface Cleaner F4AZ-19A536-RA or equivalent</p>	<p>WSE-M5B392-A</p>
<p>Silicone Gasket and Sealant F7AZ-19554-EA or equivalent</p>	<p>WSE-M4G323-A4</p>

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**Fig. 561: Material Specification Chart**  
Courtesy of FORD MOTOR CO.

## Installation

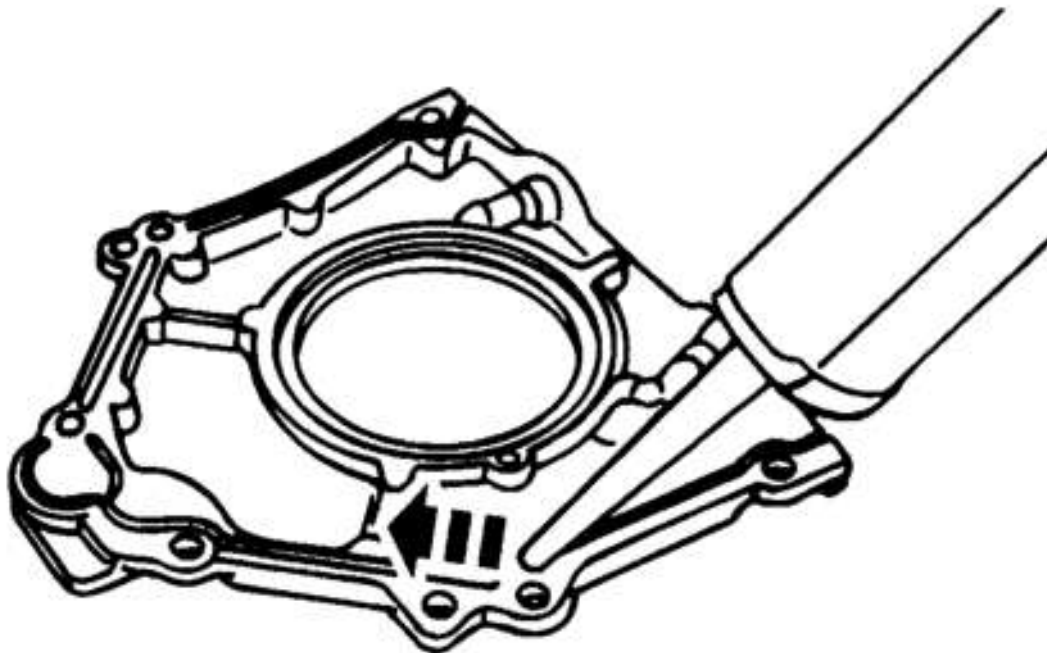
### All vehicles

1. Attach the Modular Engine Lift Bracket.
2. Remove the engine from the engine stand.

**CAUTION:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the aluminum retainer plate. These tools cause scratches and gouges, which make leak paths. Use a plastic scraping tool to remove all traces of old sealant.

3. Clean and inspect the mating surfaces of the cylinder block and the retainer plate.

**NOTE:** If not secured within four minutes, sealant must be removed and the sealing area cleaned with metal surface cleaner. Allow to dry until there is no sign of wetness, or four minutes, whichever is longer. Failure to follow this procedure can cause future oil leakage.



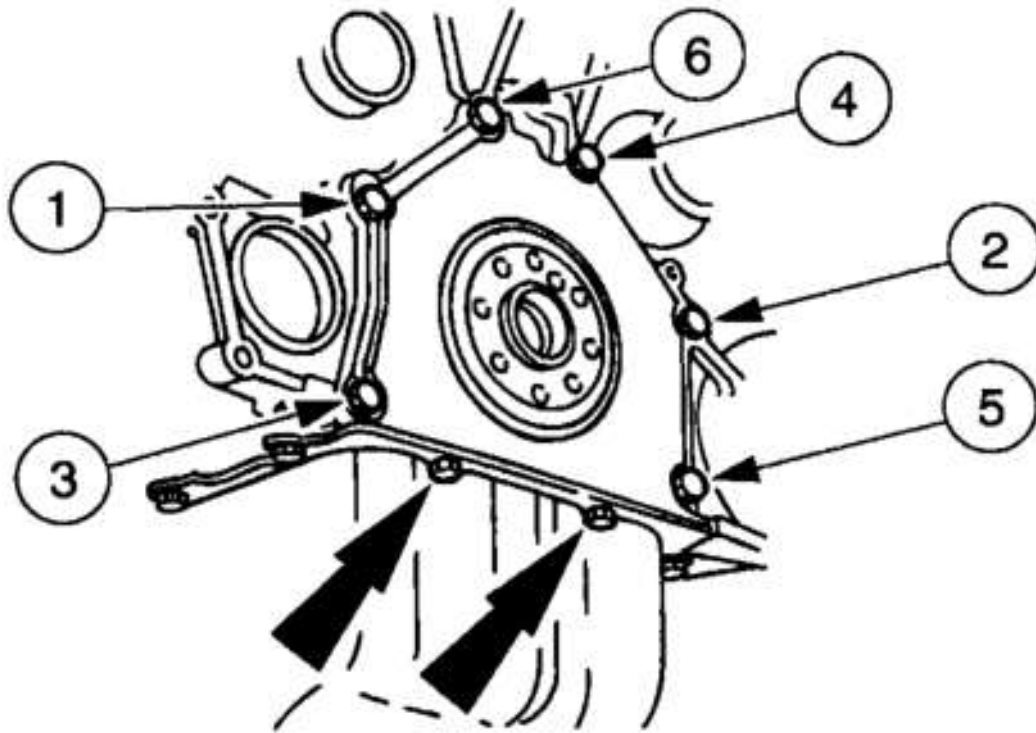
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**Fig. 562: Applying Bead Of Silicone Gasket And Sealant Around Rear Oil Seal Retainer Sealing Surface**

Courtesy of FORD MOTOR CO.

4. Apply a bead of silicone gasket and sealant around the rear oil seal retainer sealing surface.
5. Install the retainer plate. Tighten the bolts in two stages.
  - Stage 1: Tighten the retainer plate bolts to 10 Nm (89 lb-in), in the sequence shown.

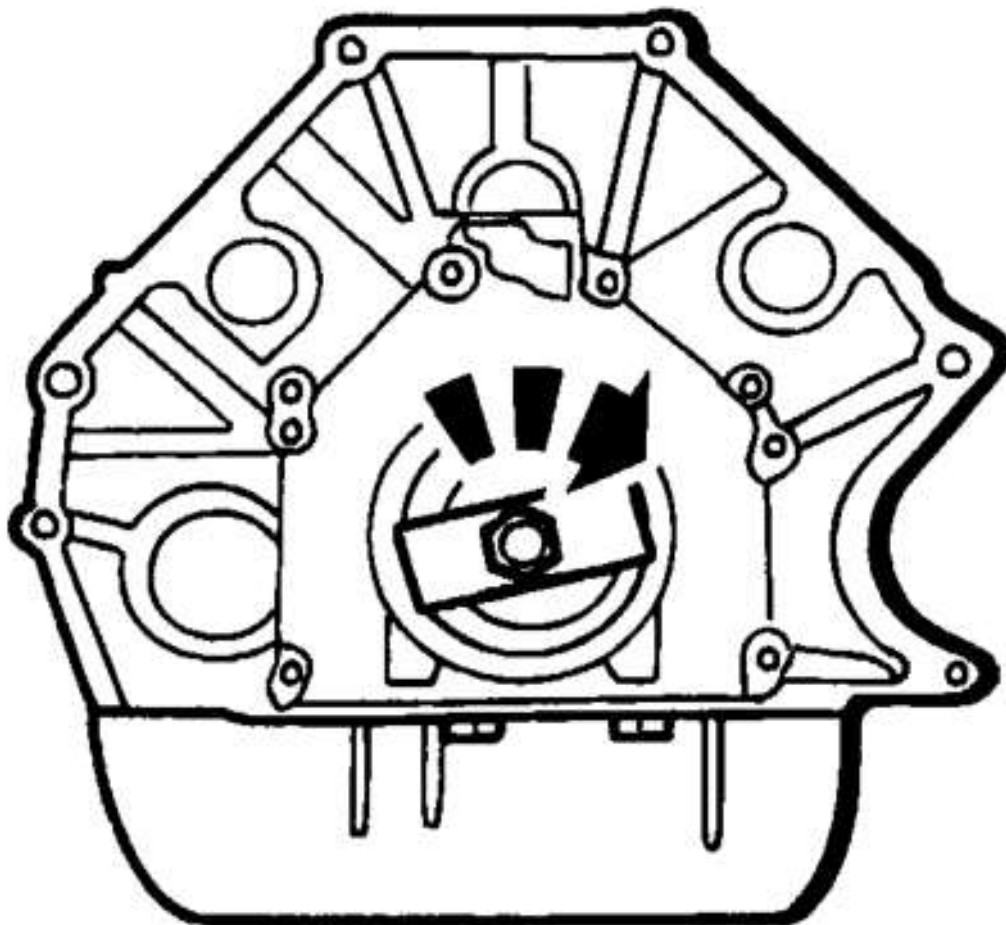
- Stage 2: Tighten the oil pan bolts to 20 Nm (20 lb-ft), then tighten an additional 90 degrees.



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**Fig. 563: Installing Retainer Plate**  
Courtesy of FORD MOTOR CO.

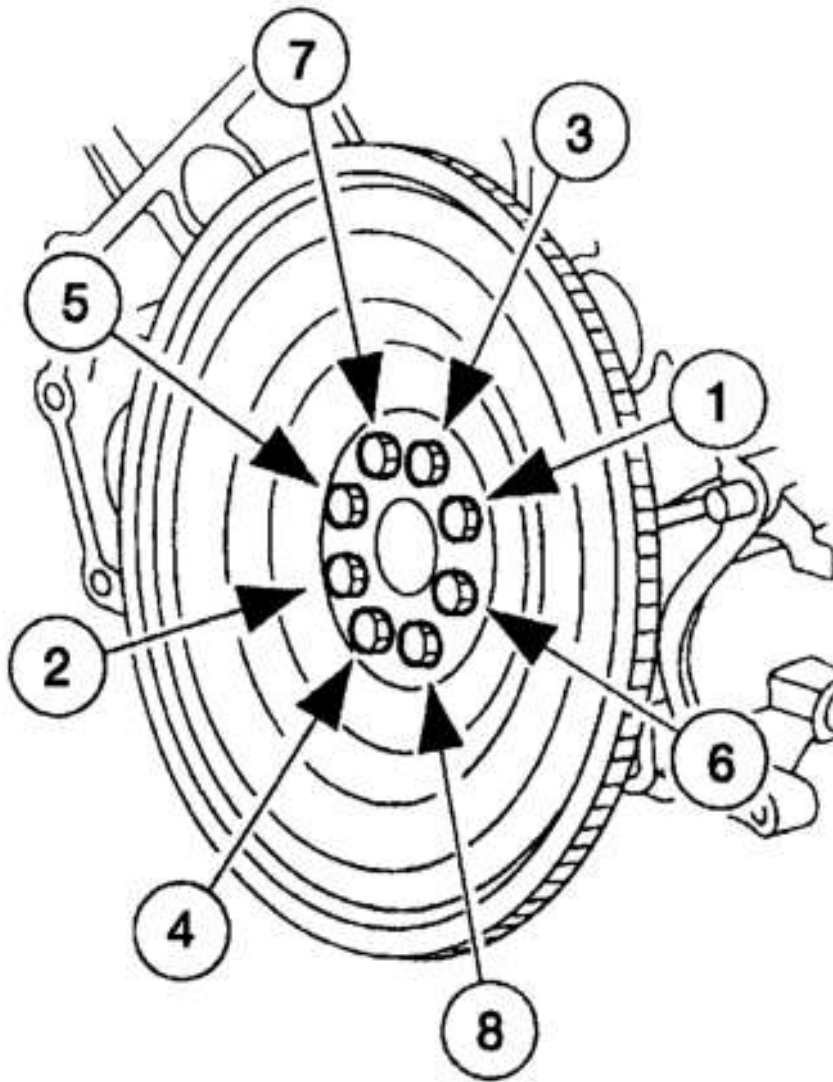
6. Use the two crankshaft rear oil seal installers to install the crankshaft rear oil seal.



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**Fig. 564: Installing Crankshaft Rear Oil Seal Using Two Crankshaft Rear Oil Seal Installers**  
Courtesy of FORD MOTOR CO.

7. Using the two crankshaft rear oil seal installers and the crankshaft rear oil slinger installer, install the crankshaft rear oil slinger.
8. Install the flywheel.

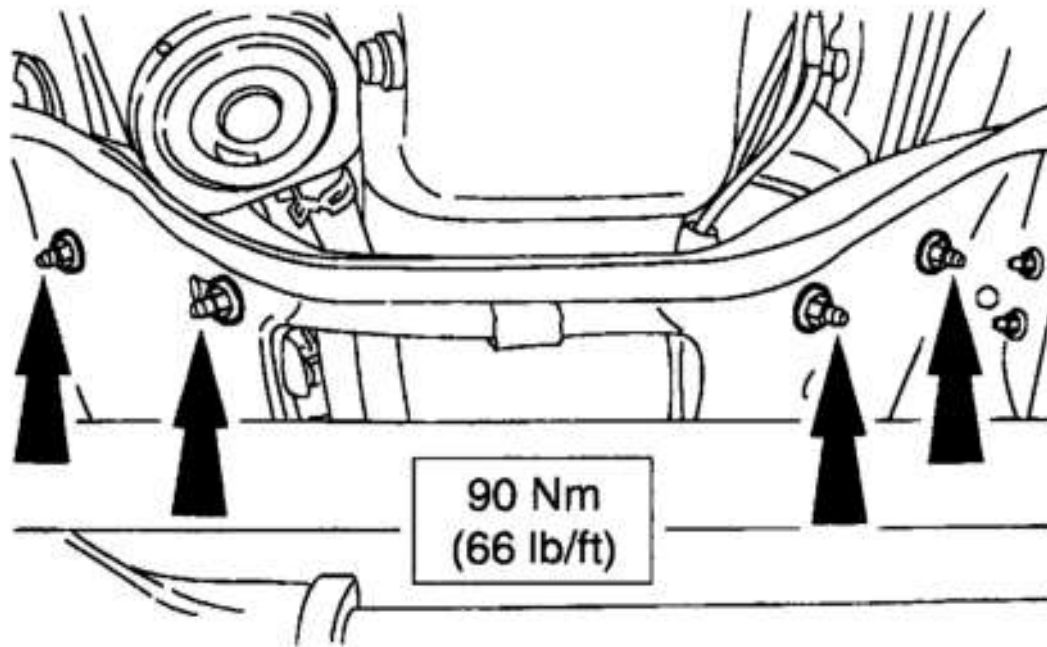


**73 - 87 Nm (54 - 64 Lb - Ft)**

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**Fig. 565: Installing Flywheel**  
Courtesy of FORD MOTOR CO.

9. Position the engine in the vehicle and remove the Modular Engine Lift Bracket and the jack supporting the transmission.
10. Install and tighten the nuts.

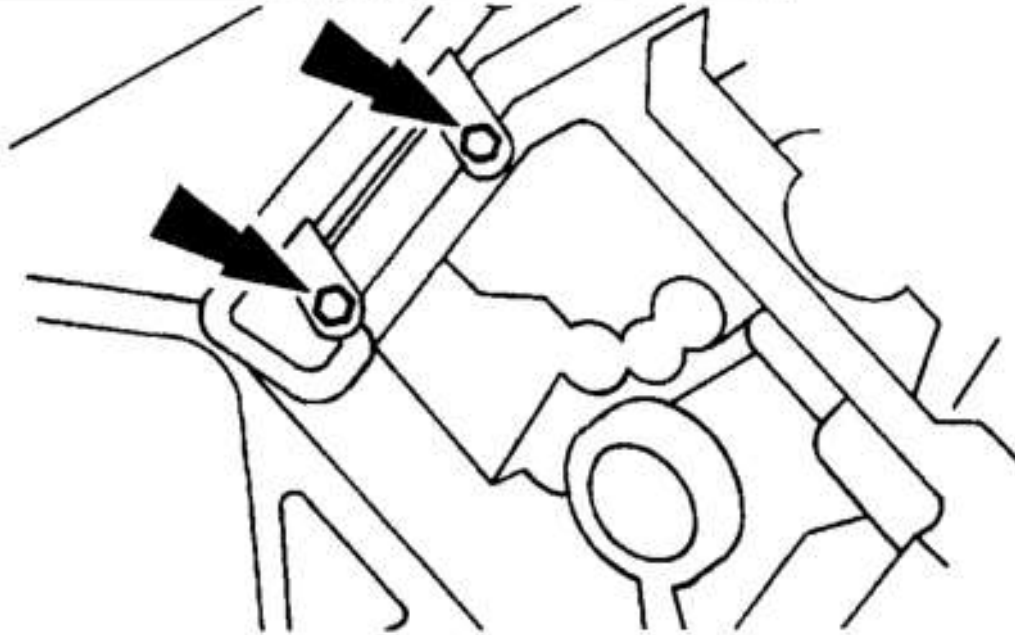


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**Fig. 566: Installing And Tightening Nuts**  
Courtesy of FORD MOTOR CO.

11. Install the heater water tube and the two studs.

20 - 30 Nm (15 - 22 Lb - Ft)

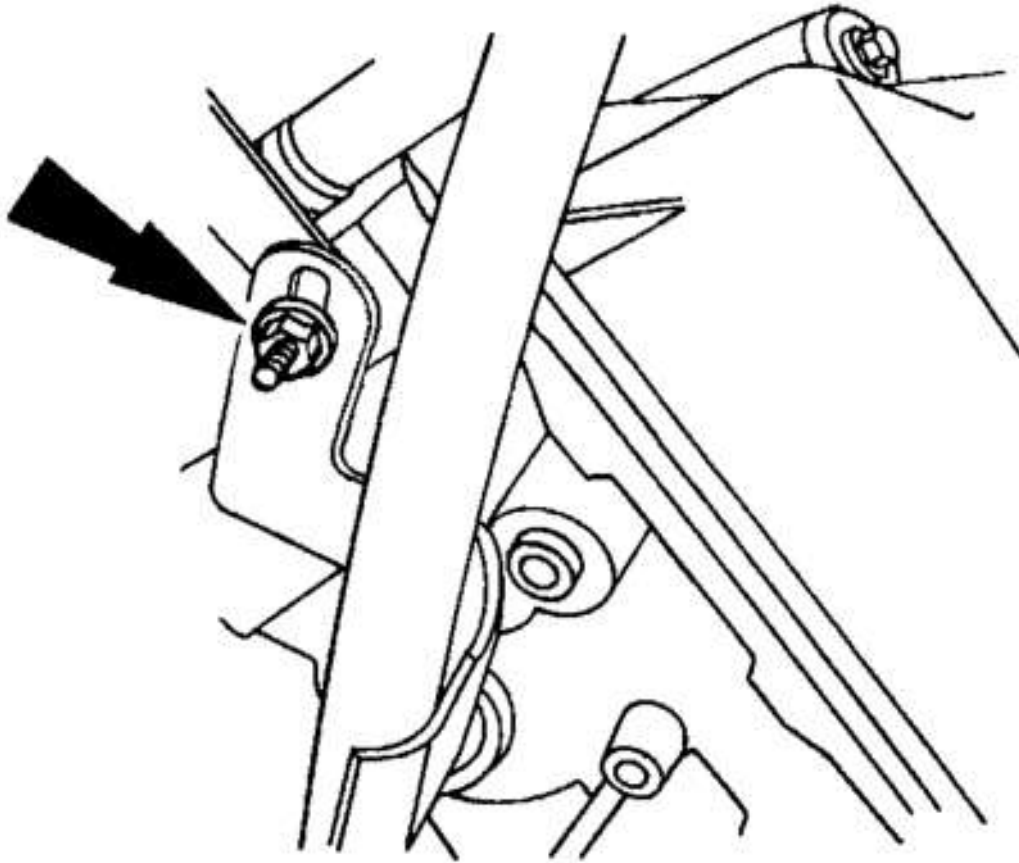


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**Fig. 567: Installing Heater Water Tube And Two Studs**  
Courtesy of FORD MOTOR CO.

12. On automatic transmission-equipped vehicles, install the transmission oil level indicator tube and the ground strap on all vehicles.





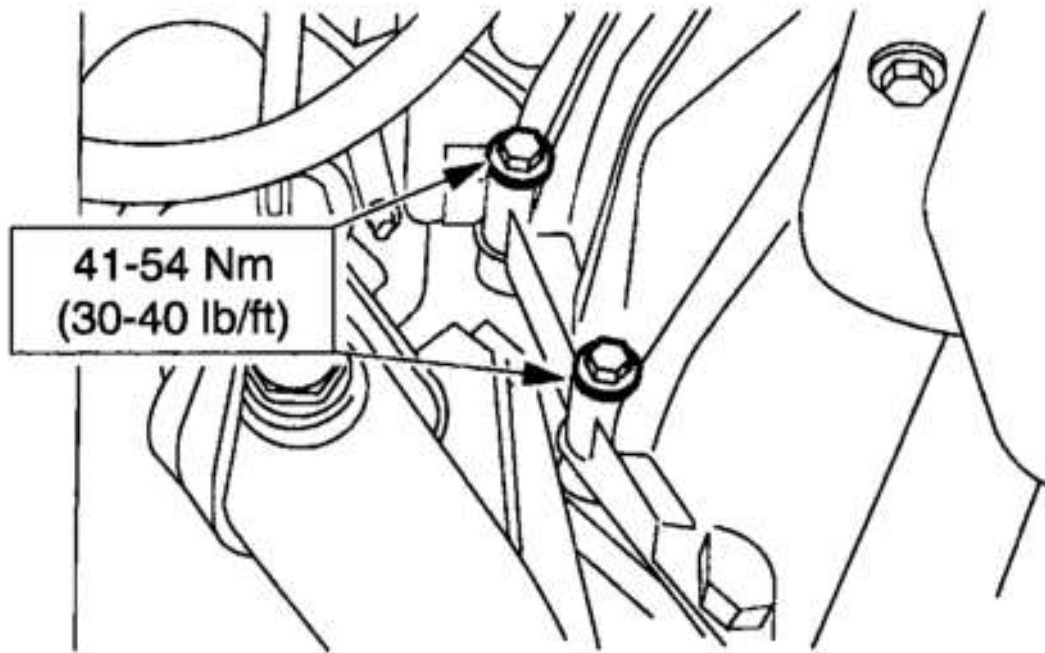
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**Fig. 568: Installing Transmission Oil Level Indicator Tube And Ground Strap**  
Courtesy of FORD MOTOR CO.

13. Raise and support the vehicle.

**Automatic transmission vehicles**

14. Install the lower transmission to engine bolts.



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**Fig. 569: Installing Lower Transmission To Engine Bolts**  
Courtesy of FORD MOTOR CO.

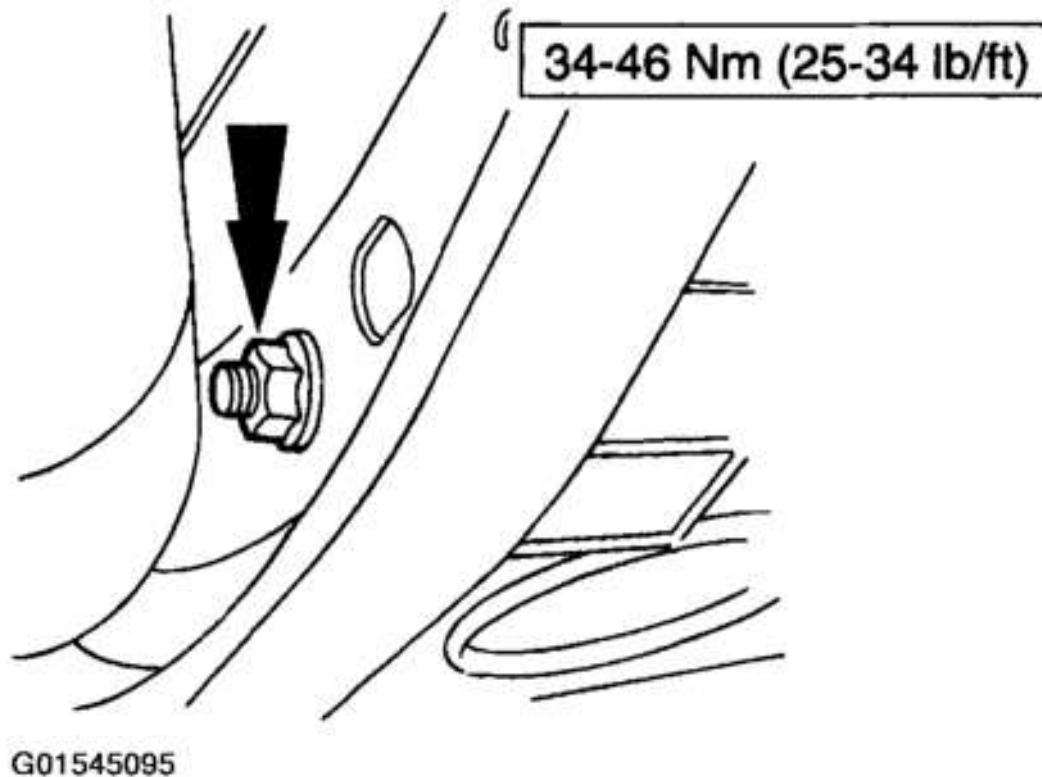
15. Install the access plug.



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**Fig. 570: Installing Access Plug**  
Courtesy of FORD MOTOR CO.

16. Install and tighten the four new nuts retaining the torque converter.

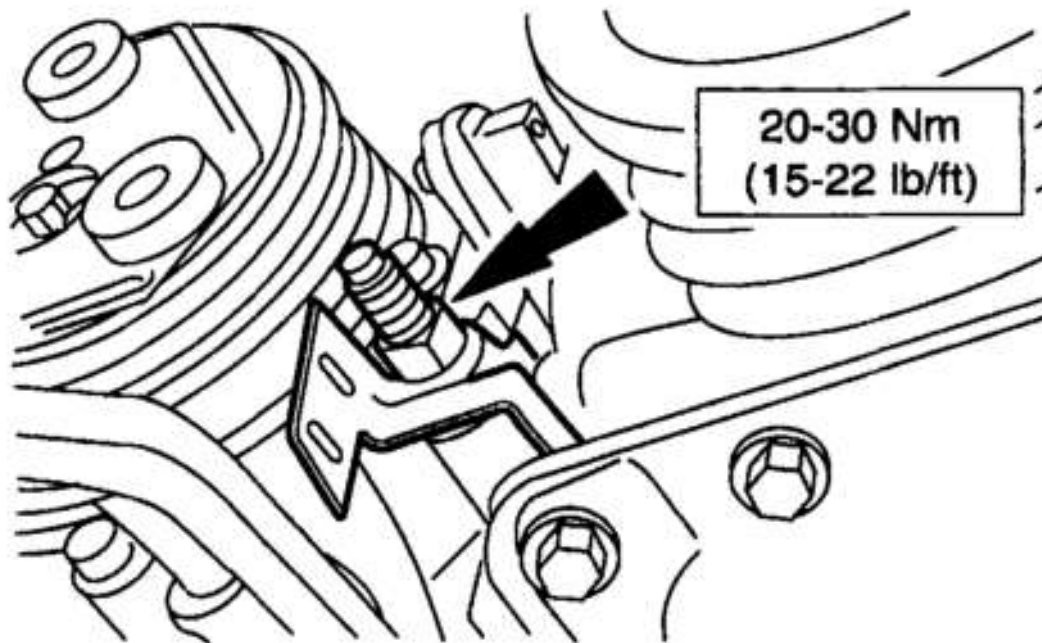


**Fig. 571: Installing And Tightening Four Nuts Retaining Torque Converter**  
Courtesy of FORD MOTOR CO.

17. Install the flywheel inspection cover.

**All vehicles**

18. Install the wiring bracket.



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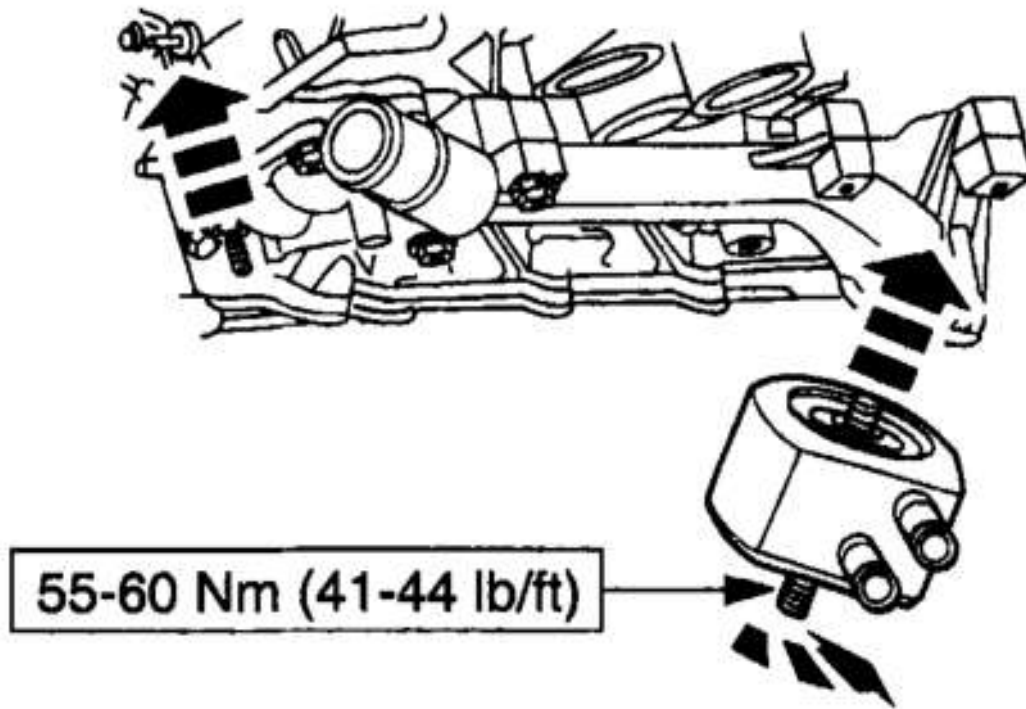
**Fig. 572: Installing Wiring Bracket**  
Courtesy of FORD MOTOR CO.

**Automatic transmission vehicles**

19. Install the starter motor. Refer to **STARTERS** .

**All vehicles**

20. Install the oil cooler to the oil filter adapter and install the oil bypass filter.



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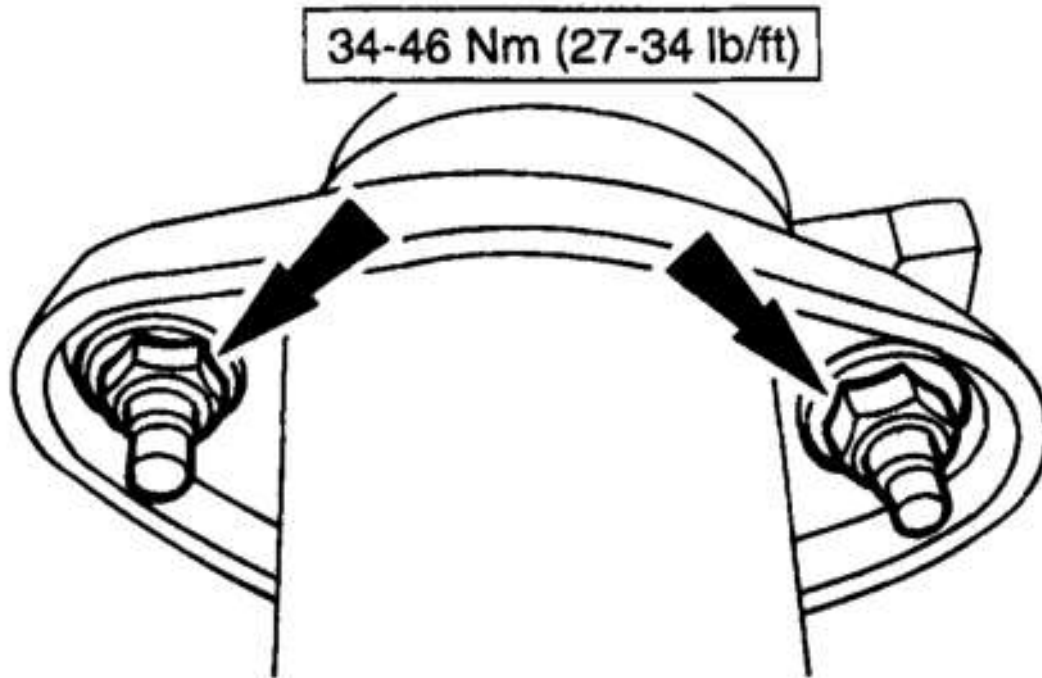
**Fig. 573: Installing Oil Cooler To Oil Filter Adapter And Installing Oil Bypass Filter**  
Courtesy of FORD MOTOR CO.

**Manual transmission vehicles**

21. Install the clutch and transmission. Refer to CLUTCH .

**All vehicles**

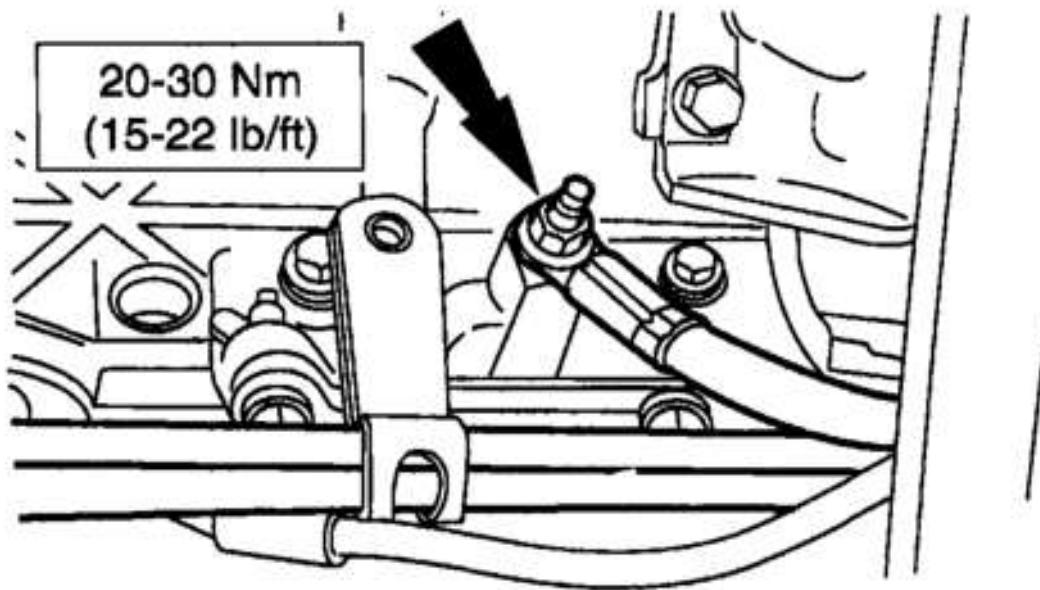
22. Install and tighten the nuts.



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**Fig. 574: Installing And Tightening Nuts**  
Courtesy of FORD MOTOR CO.

23. Install the ground strap.



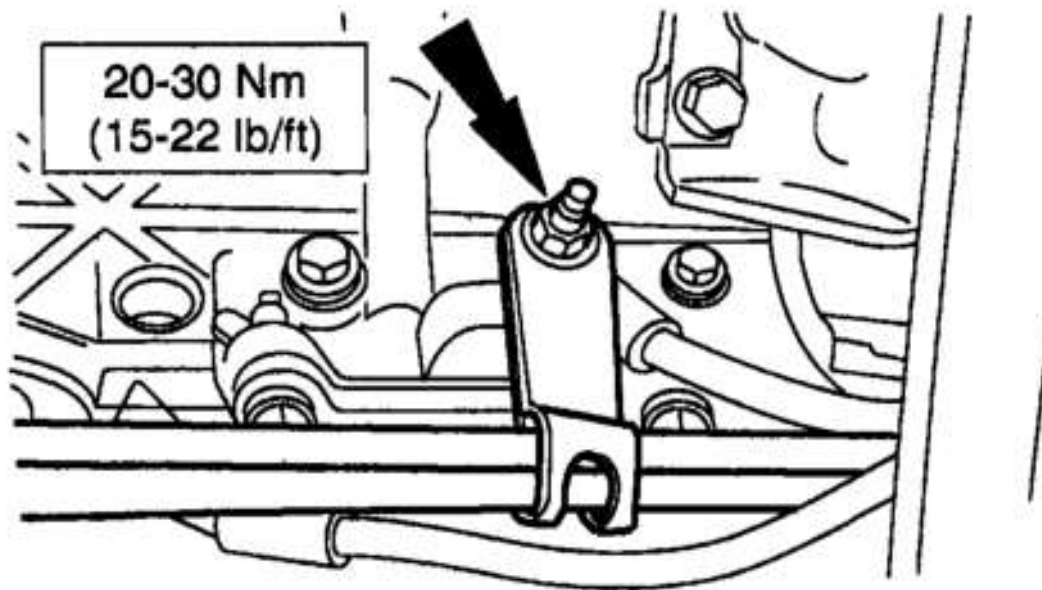
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**Fig. 575: Installing Ground Strap**  
Courtesy of FORD MOTOR CO.

**Automatic transmission vehicles**

24. Install the transmission cooler line bracket.



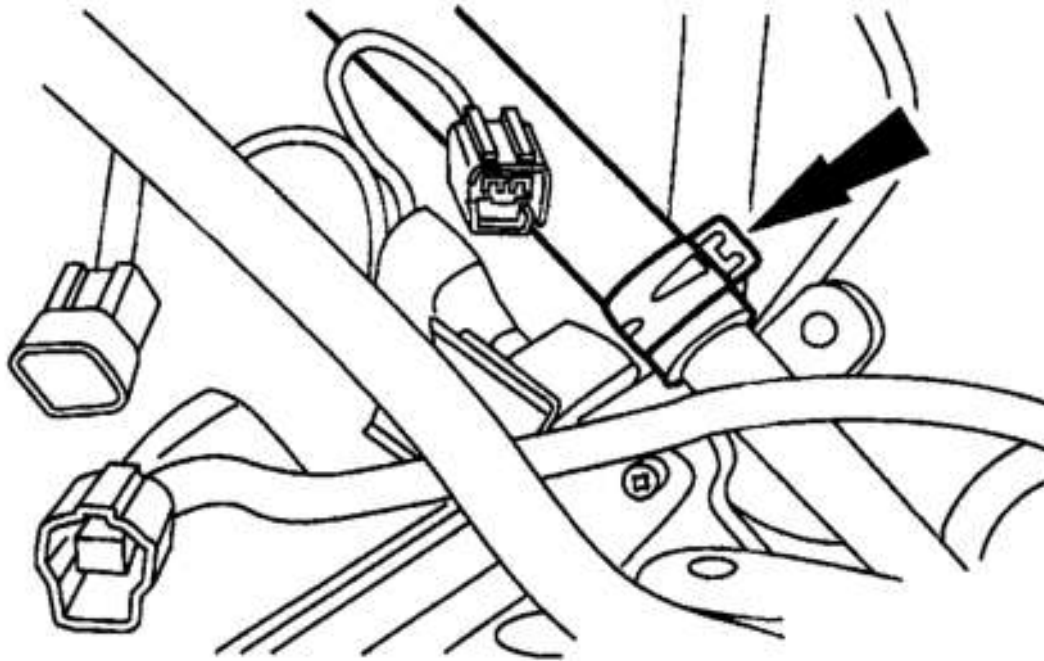


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**Fig. 576: Installing Transmission Cooler Line Bracket**  
Courtesy of FORD MOTOR CO.

**All vehicles**

25. Install the A/C compressor. Refer to AIR CONDITIONING.
26. Lower the vehicle.
27. Position back and install the heater hose at the rear of the engine.

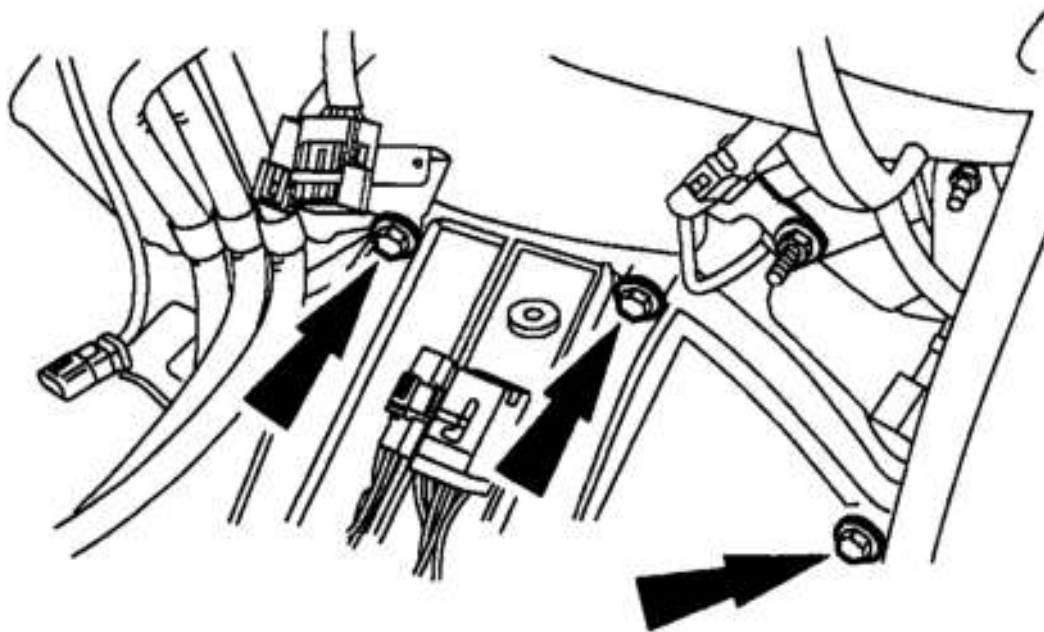


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**Fig. 577: Installing Heater Hose At Rear Of Engine**  
Courtesy of FORD MOTOR CO.

**Automatic transmission vehicles**

28. Install the remaining transmission-to-engine bolts and fuel line bracket.

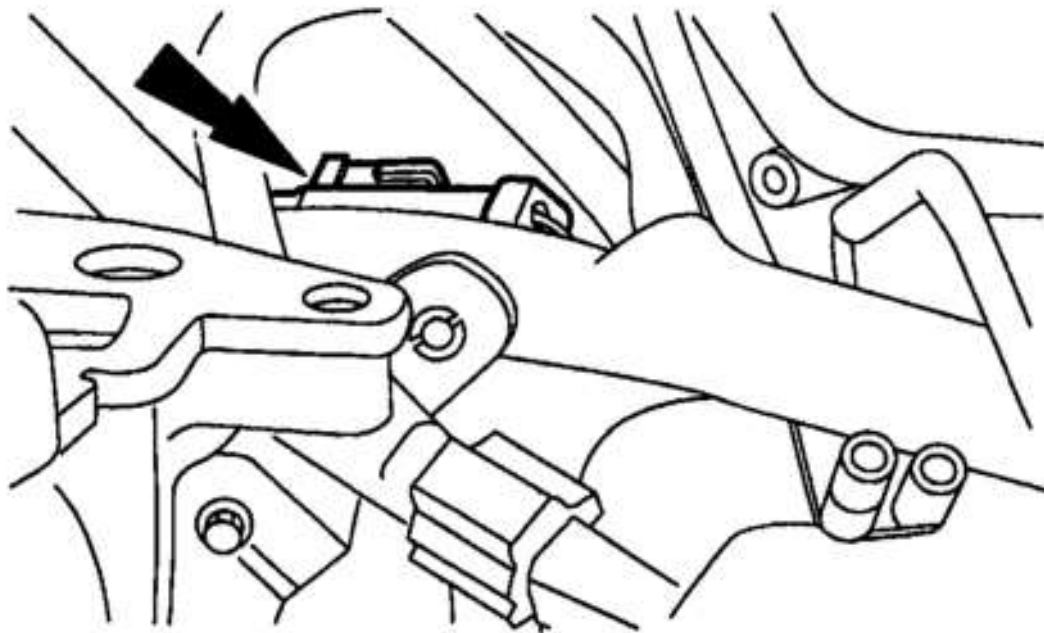


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**Fig. 578: Installing Transmission-To-Engine Bolts And Fuel Line Bracket**  
Courtesy of FORD MOTOR CO.

All vehicles

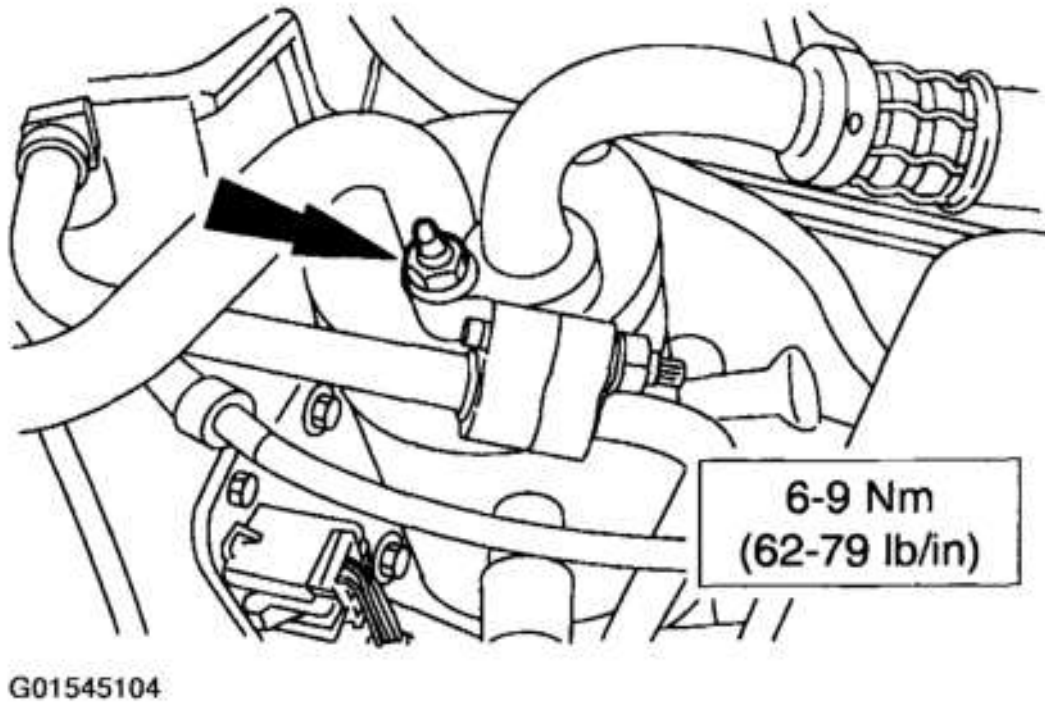
29. Connect the transmission wiring harness and the LH and RH heated exhaust gas oxygen sensor connectors.



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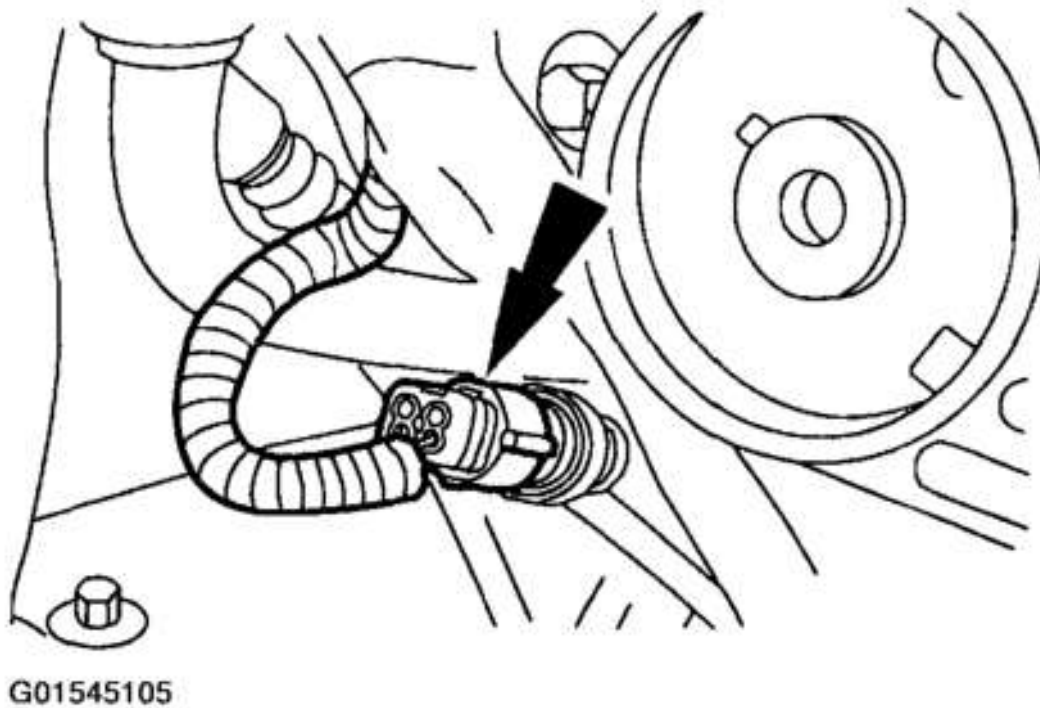
**Fig. 579: Connecting Transmission Wiring Harness And LH And RH Heated Exhaust Gas Oxygen Sensor Connectors**  
Courtesy of FORD MOTOR CO.

30. Install the suction line to the accumulator.



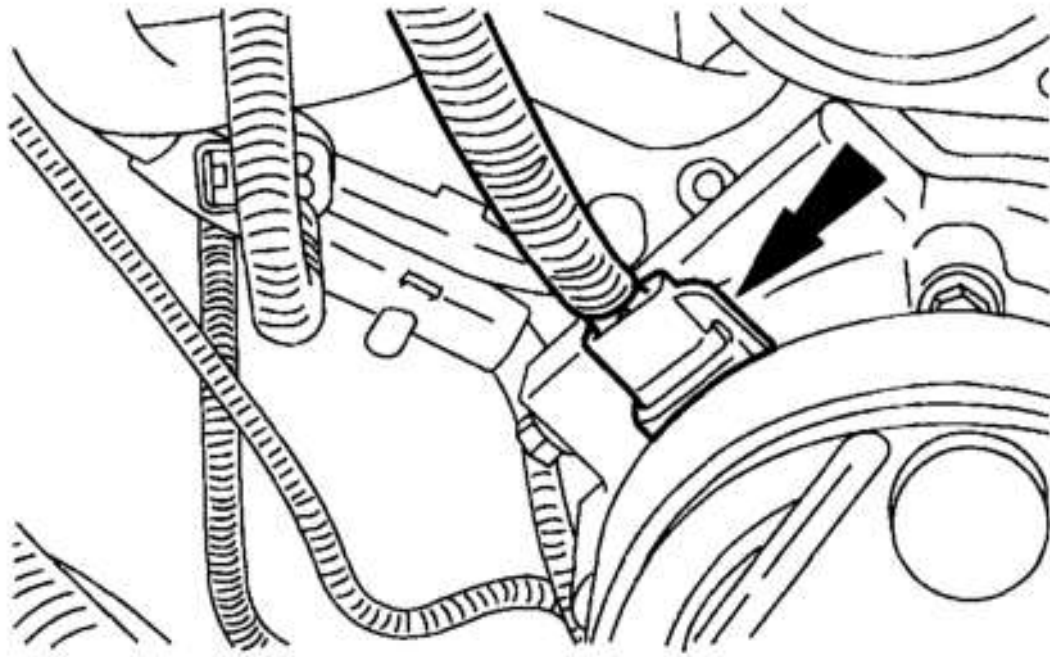
**Fig. 580: Installing Suction Line To Accumulator**  
Courtesy of FORD MOTOR CO.

31. Connect the A/C cycling switch.



**Fig. 581: Connecting A/C Cycling Switch**  
**Courtesy of FORD MOTOR CO.**

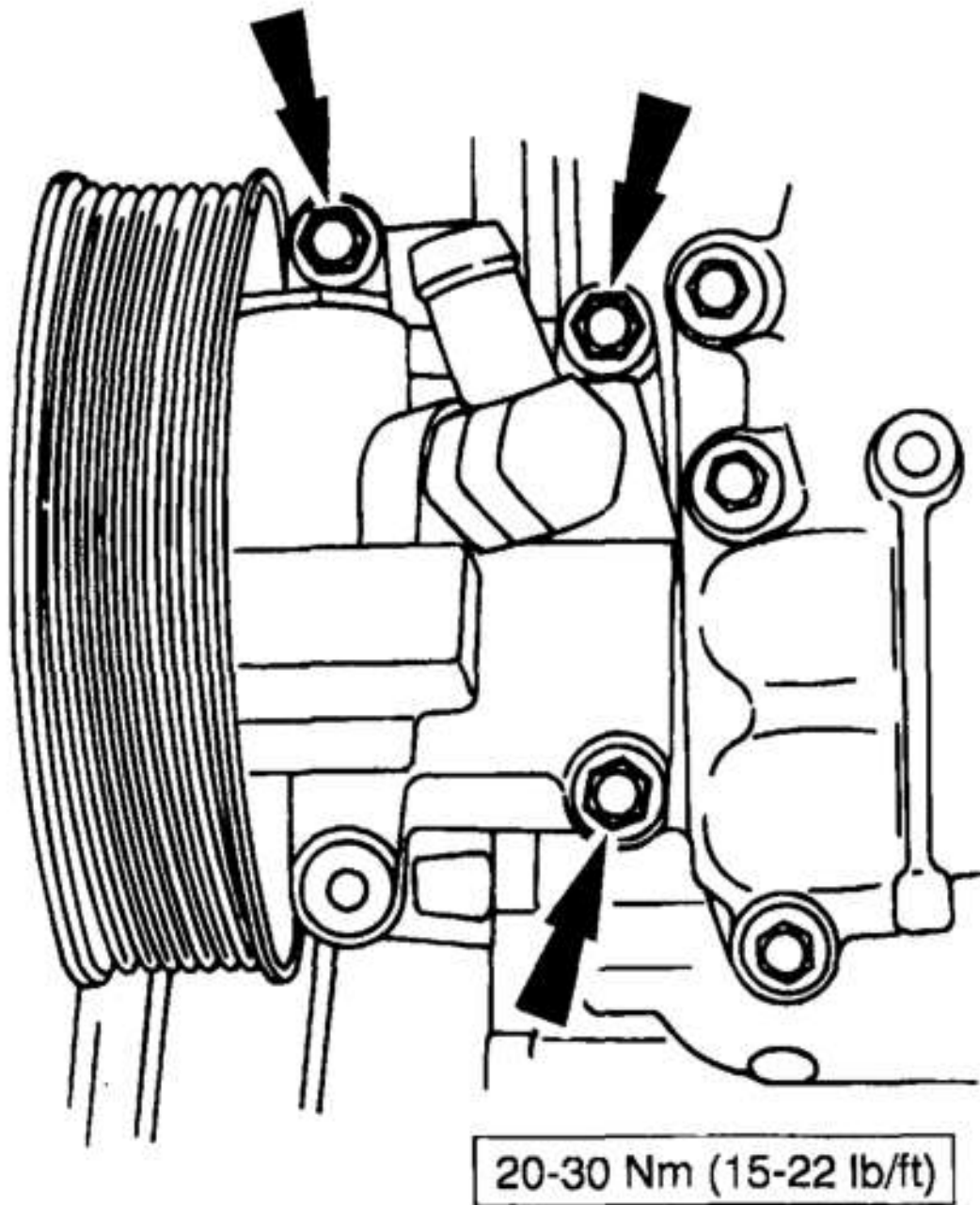
32. Connect the connector and position the harness aside.



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**Fig. 582: Connecting Connector And Positioning Harness Aside**  
Courtesy of FORD MOTOR CO.

33. Install the power steering pump.

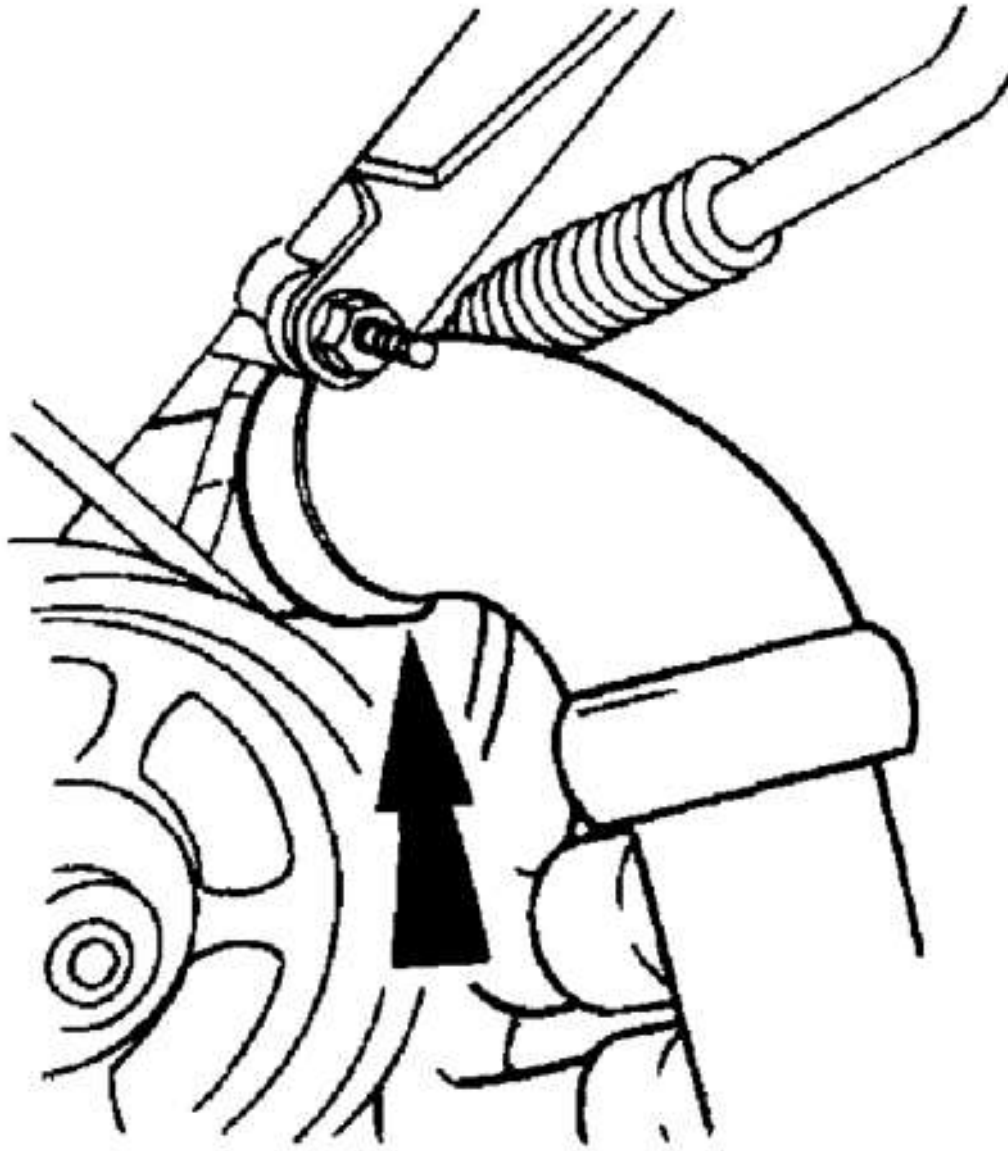


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**Fig. 583: Installing Power Steering Pump**  
Courtesy of FORD MOTOR CO.

34. Position back and connect the lower radiator hose at the oil cooler water inlet.

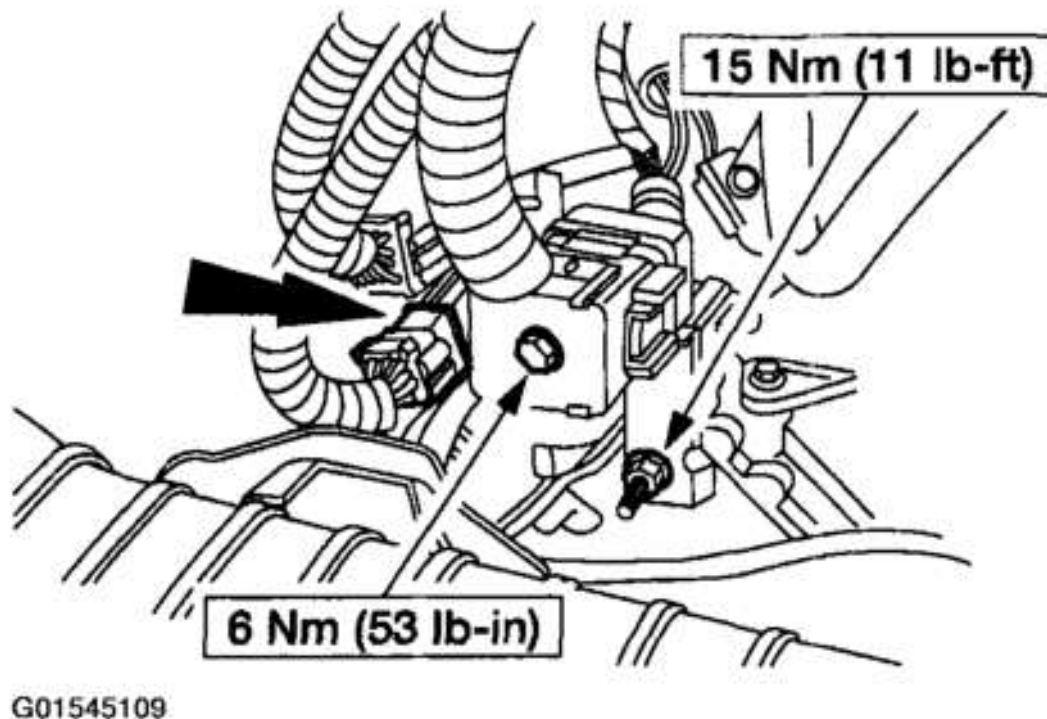




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**Fig. 584: Connecting Lower Radiator Hose At Oil Cooler Water Inlet**  
Courtesy of FORD MOTOR CO.

35. Install the intake manifold. Refer to **Intake Manifold**.
36. Install the harness mounting bracket and connect the 42-pin and 16-pin connectors.



**Fig. 585: Installing Harness Mounting Bracket And Connecting 42-Pin And 16-Pin Connectors**  
Courtesy of FORD MOTOR CO.

37. Install the radiator. Refer to ENGINE COOLING .
38. Install the A/C condenser core. Refer to AIR CONDITIONING .
39. Install the radiator grille support. Refer to FRONT END BODY PANELS .
40. Fill all fluids to the correct levels.
41. Connect the battery ground cable.
42. Start the engine and check for leaks. Stop the engine and recheck the fluid levels.
43. Evacuate and recharge the A/C system. Refer to CLIMATE CONTROL SYSTEM - GENERAL INFORMATION .