

# SECTION 03-04B Turbocharger

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## VEHICLE APPLICATION

Capri.

## DESCRIPTION

The 1.6L DOHC multiport fuel injected (MFI), turbocharged, charge air cooled engine offers performance comparable to a larger displacement, naturally aspirated engine, but offers substantially better fuel economy than larger displacement engines of comparable horsepower ratings. Related design improvements include precise control of port injected fuel metering with computer controlled spark and engine idle speed.

The turbocharger (TC) (9G439) is an "on-demand" system that boosts engine output at high-load / high-speed conditions, but has little effect on fuel economy at moderate to light load conditions.

The charge air cooler (CAC) (6K775) is mounted next to the radiator. The charge air cooler cools intake air from the turbocharger before it enters the engine, providing for a denser air charge for increased engine performance.

**NOTE:** The turbocharger is not just a bolt-on option. It is a part of a highly integrated engine turbocharging system. Turbocharged parts and equipment are not interchangeable with similar parts on non-turbocharged engines.

The turbocharger is mounted on the lower left (front) side of the engine.

The turbocharger consists of five major components:

- The ACTUATOR is a spring-loaded diaphragm device that senses and controls the pressure in the compressor discharge.
- The COMPRESSOR is a centrifugal, radial outflow type.
- The TURBINE is a centripetal, radial inflow type, which drives the compressor.
- The integral WASTEGATE ASSEMBLY, which allows a portion of the exhaust gas to bypass the turbine wheel limiting compressor speed, is controlled automatically to limit boost pressure.
- The CENTER HOUSING supports the bearings, the compressor, turbine wheels and oil seals.

## LUBRICATION

The turbocharger is lubricated by engine oil. Because a turbocharger operates at speeds up to 150,000 revolutions per minute, lubrication of the bearings, which support the shaft, is important for cooling and friction reduction. As with any engine, accelerating the engine to top rpm immediately after starting can damage the engine and / or turbocharger. In the same respect, immediately shutting down an engine that has been operating at a higher rpm for an extended period of time can damage the engine and / or turbocharger.

1. Turbocharger oil pressure is obtained through an adapter fitting on the rear of the engine.
2. Oil pressure is supplied to the turbocharger through an oil supply tube.
3. Oil enters the turbocharger through a controlled orifice in the center housing, which controls the flow of oil into the turbocharger.

**NOTE:** Excessive oil pressure can cause oil seal leaks in the turbocharger.

### LUBRICATION (Continued)

4. Center housing bearings are lubricated through oil passages which direct oil to the bearings.
5. Bearings are drilled to improve oil circulation.
6. A piston ring seal is used at each end of the turbocharger shaft to prevent engine oil leakage into the compressor and turbine housing.
7. Oil drains from the turbocharger through a return port in the bottom of the center housing.
8. Oil returns to the engine through an oil return line.

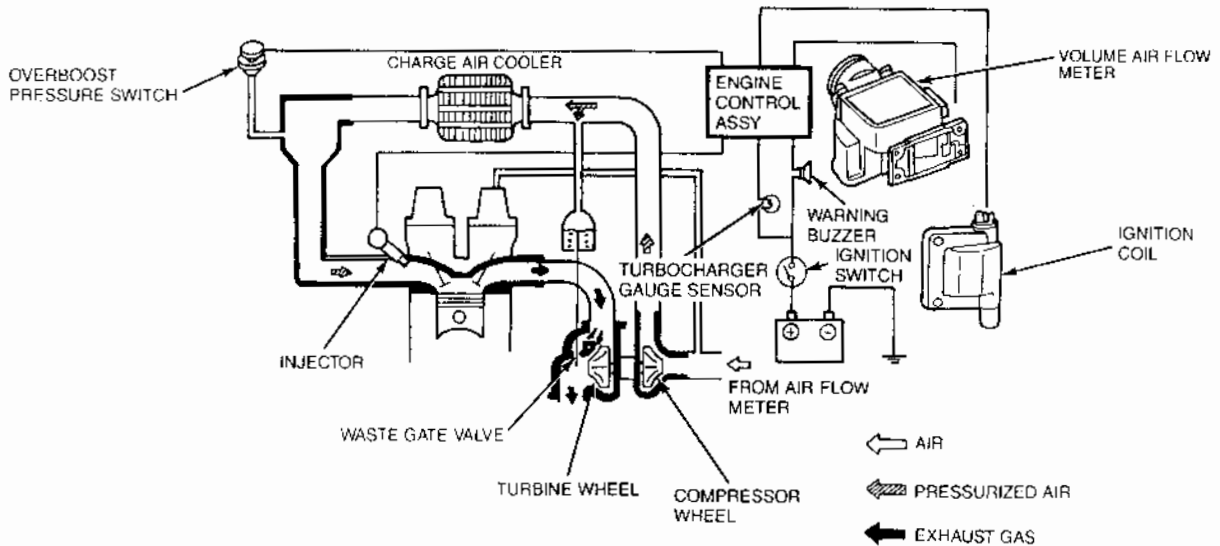
**CAUTION: Exhaust system suction can cause oil to leak past these seals during diagnosis.**

### OPERATION

#### Air-Fuel/Exhaust Gas Flow

A turbocharger enables an engine to consume a denser air-fuel mixture. This increases horsepower and torque (on demand).

The fuel injectors are located in the intake manifold. Fuel is introduced downstream of the compressor.



V7440-C

#### Boost Control, Automatic

Boost is controlled by the wastegate. The wastegate closes to optimize vehicle performance, opening only to limit boost to maximum specified levels.

#### DIAGNOSIS AND TESTING

**NOTE:** For additional specifications not covered in this section, refer to Powertrain Control/Emissions Diagnosis Manual<sup>1</sup>.

<sup>1</sup> Can be purchased as a separate item.

## DIAGNOSIS AND TESTING (Continued)

**Bearing Clearance Check**

1. Manually move the turbocharged blade shaft assembly as far in one direction as possible. Spin the shaft by hand.
2. Manually move the shaft in the opposite direction as far as possible, and spin the shaft again.
3. If neither the turbine band nor the compressor blade contacts any portion of their respective housings, the bearings are still good.
4. If either blade comes in contact with the housing, the bearings are worn, and the turbocharger should be replaced.

Refer to the Diagnosis Charts for further diagnosis.

**TURBOCHARGER DIAGNOSIS**

CONDITION	POSSIBLE SOURCE	ACTION
● No Boost	<ul style="list-style-type: none"> <li>● Compressor inlet hose collapsed.</li> <li>● Compressor outlet to throttle body hose leaking.</li> <li>● Turbocharger turbine or compressor wheel damage.</li> <li>● Turbocharger bearings seized.</li> <li>● Wastegate stuck open.</li> <li>● Clogged air cleaner element or restriction upstream of compressor.</li> </ul>	<ul style="list-style-type: none"> <li>● Service as required.</li> <li>● Tighten hose.</li> <li>● Replace turbocharger.</li> <li>● Replace turbocharger.</li> <li>● Service / replace as required.<sup>2</sup></li> <li>● Service as required.</li> </ul>
● Lack of Power	<ul style="list-style-type: none"> <li>● Engine.</li> <li>● Low compression.</li> <li>● Incorrect valve timing and/or clearance.</li> <li>● Incorrect ignition timing.</li> <li>● Clogged air cleaner element or restriction upstream of compressor.</li> <li>● Insufficient fuel supply.</li> <li>● Restriction.</li> <li>● Low fuel pressure.</li> <li>● Oxygen sensor (O2S) (9F472) malfunctioning.</li> <li>● Electronic control assembly malfunctioning.</li> <li>● Volume air flow (VAF) (12B529) meter malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>● Refer to Powertrain Control/Emissions Diagnosis Manual<sup>3</sup>.</li> <li>● Service as required.</li> <li>● Refer to Powertrain Control/Emissions Diagnosis Manual<sup>3</sup>.</li> </ul>
● Detonation With No Boost	<ul style="list-style-type: none"> <li>● Low grade fuel.</li> <li>● Ignition timing advanced too far.</li> </ul>	<ul style="list-style-type: none"> <li>● Draw fuel tank and fill with correct octane fuel.</li> <li>● Adjust.</li> </ul>
● With Normal Boost	<ul style="list-style-type: none"> <li>● Low grade fuel.</li> <li>● Ignition timing advanced too far.</li> <li>● Insufficient fuel supply.</li> <li>● Restriction.</li> <li>● Low fuel pressure.</li> <li>● Oxygen sensor malfunctioning.</li> <li>● Powertrain control module (PCM) (12A650) malfunctioning.</li> <li>● Engine overheating.</li> <li>● Oil leaking into compressor from turbocharger.<sup>4</sup></li> <li>● Valve seals leaking oil.<sup>4</sup></li> </ul>	<ul style="list-style-type: none"> <li>● Drain fuel tank and fill with correct octane fuel.</li> <li>● Adjust.</li> <li>● Refer to Powertrain Control/Emissions Diagnosis Manual<sup>3</sup>.</li> <li>● Service as required.<sup>4</sup></li> <li>● Service as required.<sup>4</sup></li> </ul>

<sup>2</sup> Refer to Wastegate System Diagnosis.

<sup>3</sup> Can be purchased as a separate item.

<sup>4</sup> Refer to Exhaust Smoky—Internal Oil Leaks Diagnosis

## DIAGNOSIS AND TESTING (Continued)

## TURBOCHARGER DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> <li>Excessive Fuel Consumption (Black Exhaust Smoke)</li> </ul>	<ul style="list-style-type: none"> <li>Engine out of tune.</li> <li>Volume air flow meter malfunctioning.</li> <li>High fuel pressure.</li> <li>Pressure regulator.</li> <li>Fuel return plugged or kinked.</li> <li>Injectors leaking.</li> <li>Oxygen sensor malfunctioning.</li> <li>Powertrain control module malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>Service as required. Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> <li>Service as required. Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> <li>Service as required. Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> <li>Clean or replace as required.</li> <li>Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> <li>Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> </ul>
<ul style="list-style-type: none"> <li>Excessive Oil Consumption (Blue, Gray, or White Exhaust Smoke)</li> </ul>	<ul style="list-style-type: none"> <li>Incorrect type or grade of oil.</li> <li>Extended oil change intervals.</li> <li>Clogged air cleaner element or restriction upstream of compressor.</li> <li>Engine wear (piston rings, valve guides).</li> <li>PCV system malfunctioning.</li> <li>Turbocharger oil seals leaking.<sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>Drain and fill with specified oil.</li> <li>Change oil as recommended.</li> <li>Service as required.</li> <li>Service as required.</li> <li>Refer to Powertrain Control/Emissions Diagnosis Manual<sup>5</sup>.</li> <li>Replace turbocharger.<sup>6</sup></li> </ul>
<ul style="list-style-type: none"> <li>Noise or Vibration</li> </ul>	<ul style="list-style-type: none"> <li>Leaks at turbocharger inlet and outlet connections.</li> <li>Foreign object damage to turbine or compressor blades.</li> <li>Turbine bearing failure.</li> </ul>	<ul style="list-style-type: none"> <li>Service as required.</li> <li>Replace turbocharger.</li> <li>Replace turbocharger.</li> </ul>
<ul style="list-style-type: none"> <li>High Boost</li> </ul>	<ul style="list-style-type: none"> <li>Wastegate not operating<sup>7</sup>.</li> <li>Leak in exhaust system before muffler.</li> <li>Leak in wastegate activator to compressor.</li> <li>Discharge hose.<sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>Service/replace as required<sup>7</sup>.</li> <li>Service as required.</li> <li>Service as required.</li> <li>Service/replace as required.</li> </ul>

## PINPOINT TEST A: EXHAUST SMOKY —INTERNAL OIL LEAKS

TEST STEP		RESULT	ACTION TO TAKE
A1	CHECK COMPRESSOR OUTLET		
	<ul style="list-style-type: none"> <li>Check compressor outlet for evidence of oil.</li> <li>Is there oil present?</li> </ul>	Yes No	<ul style="list-style-type: none"> <li>GO to A2.</li> <li>GO to A5.</li> </ul>
A2	CHECK COMPRESSOR INLET		
	<ul style="list-style-type: none"> <li>Check compressor inlet for evidence of oil.</li> <li>Is there oil present?</li> </ul>	Yes No	<ul style="list-style-type: none"> <li>Turbocharger OK. CHECK PCV system for proper operation.</li> <li>GO to A3.</li> </ul>
A3	CHECK FOR OIL SUPPLY RESTRICTION		
	<ul style="list-style-type: none"> <li>Check for restriction in the turbocharger oil supply tube.</li> <li>Is there a restriction?</li> </ul>	Yes No	<ul style="list-style-type: none"> <li>SERVICE as required.</li> <li>GO to A4.</li> </ul>
A4	CHECK OIL RETURN TUBE		
	<ul style="list-style-type: none"> <li>Check for restriction in the turbocharger oil return tube.</li> <li>Is there a restriction?</li> </ul>	Yes No	<ul style="list-style-type: none"> <li>SERVICE as required.</li> <li>REPLACE turbocharger.</li> </ul>

5 Can be purchased as a separate item.

6 Refer to Exhaust Smoky—Internal Oil Leaks Diagnosis

7 Refer to Waste System Diagnosis

## DIAGNOSIS AND TESTING (Continued)

## PINPOINT TEST A: EXHAUST SMOKY—INTERNAL OIL LEAKS (Continued)

TEST STEP		RESULT	ACTION TO TAKE
A5	CHECKING TURBINE OUTLET		
	<ul style="list-style-type: none"> <li>● Check turbine outlet for evidence of oil.</li> <li>● <b>Is there oil present?</b></li> </ul>	Yes No	GO to A6. Turbocharger OK. If exhaust is smoky, condition is elsewhere in vehicle. REFER to Powertrain Control/Emissions Diagnosis Manual <sup>8</sup> .
A6	CHECK TURBINE INLET		
	<ul style="list-style-type: none"> <li>● Check turbine inlet for evidence of oil.</li> <li>● <b>Is there oil present?</b></li> </ul>	Yes No	Condition internal in engine. GO to A4.

## PINPOINT TEST B: WASTEGATE SYSTEM

TEST STEP		RESULT	ACTION TO TAKE
B1	CHECK DIAPHRAGM		
	<ul style="list-style-type: none"> <li>● Remove actuator diaphragm hose at diaphragm.</li> <li>● Connect pressure diagnostic gauge or equivalent, to diaphragm inlet.</li> <li>● Apply 48-59 kPa (7-8.5 psi) of pressure to diaphragm.</li> <li>● Wastegate actuator rod should move.</li> <li>● <b>Does rod move?</b></li> </ul>	Yes No	Wastegate system OK. REPLACE turbocharger.

**CAUTION:** Exhaust system suction can cause oil to leak past the shaft seals during diagnosis procedures.

After changing the oil and oil filter on a turbocharged engine, or when performing any service operation, start the engine and let idle for 30-60 seconds before driving.

## REMOVAL AND INSTALLATION

The turbocharger is serviced by replacement only. Before starting any turbocharger unit service / removal procedure, clean the area around turbocharger assembly with non-caustic solution.

Cover openings of engine assembly and turbocharger connections to prevent entry of foreign material while turbocharger is off the engine.

When removing turbocharger assembly, take special care not to bend, nick, or in any way damage the turbine or compressor wheel blades. Any damage may result in rotating assembly imbalance, and failure of the bearings and oil seals.

Any time a basic engine bearing (main bearing, connecting rod bearing, camshaft bearing) has been damaged in a turbocharged engine, the oil and oil filter should be changed as a part of the service procedure. In addition, the turbocharger should be flushed with clean engine oil to reduce the possibility of contamination.

**CAUTION:** Interruption or contamination of the oil supply to the bearings in the center housing, which support the rotating assembly, can result in severe turbocharger damage.

## Turbocharger

## Removal

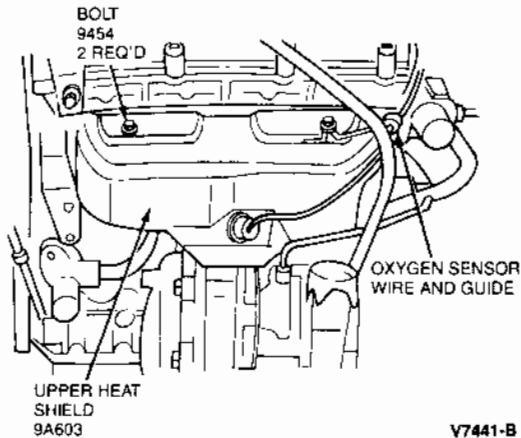
1. Disconnect negative battery cable.
2. Drain cooling system. Refer to Section 03-03.
3. Remove throttle body (TB) (9E926) air intake tube.
4. Disconnect charge air cooler hose from turbocharger assembly and position both charge air cooler hoses out of the way.
5. Remove oxygen sensor connector from its retaining clip and disconnect oxygen sensor.
6. Remove three bolts retaining lower heat shield to turbocharger and remove lower heat shield.

<sup>8</sup> Can be purchased as a separate item.

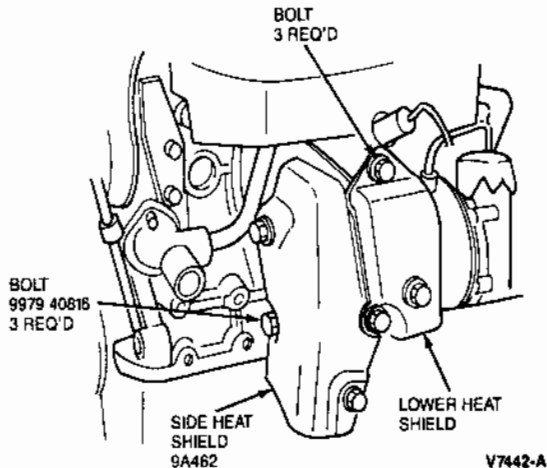
## REMOVAL AND INSTALLATION (Continued)

7. Remove two bolts retaining upper heat shield to exhaust manifold and remove upper heat shield.

NOTE: Feed oxygen sensor wire and guide through upper heat shield.



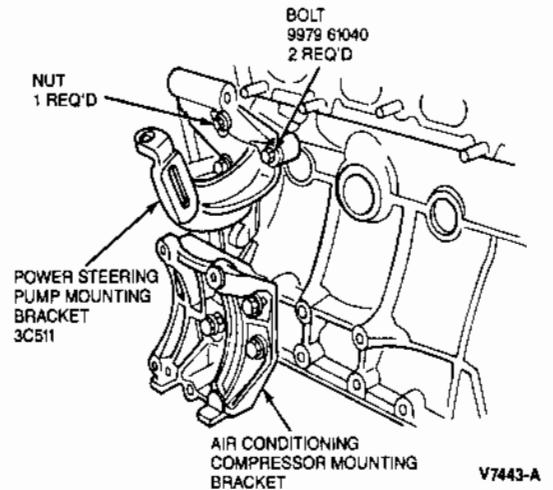
8. Remove three bolts retaining side heat shield to turbocharger and remove side heat shield.



NOTE: It will be necessary to remove the power steering pump and mounting bracket to access the lower LH exhaust manifold retaining nut and to remove exhaust manifold from studs.

9. Remove power steering belt. Refer to Section 03-05.
10. Remove power steering pump through bolt and remove nut and bolt from adjuster.
11. Pull pump from mounting bracket and position out of the way.
12. Disconnect lower radiator hose from water pump.
13. Position power steering pump to access mounting bracket retaining bolts and nut.

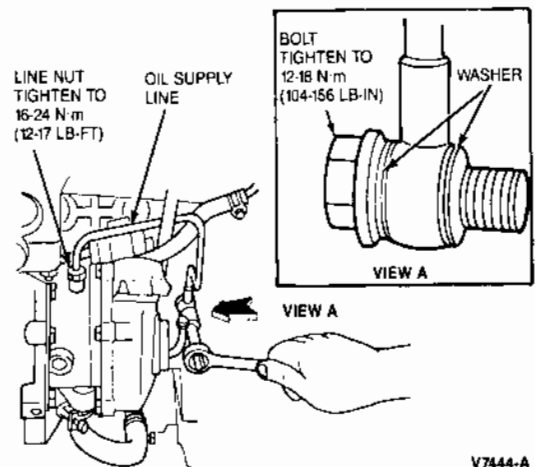
14. Remove two bolts and one nut retaining mounting bracket to engine and remove bracket.



15. Remove two screws retaining air cleaner duct tube, loosen clamp at turbocharger and position duct tube out of the way.

16. Disconnect coolant return hose at turbocharger.

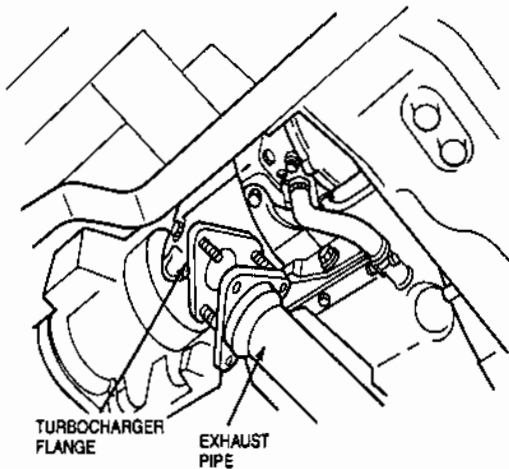
17. Remove bolt and brass sealing washers retaining oil supply line at engine block.



18. Raise vehicle on a hoist. Refer to Section 00-02.
19. Remove three retaining nuts and washers from exhaust pipe flange.
20. Remove two bolts retaining exhaust hanger to engine block.
21. Slide off two rubber exhaust hangers at catalyst.

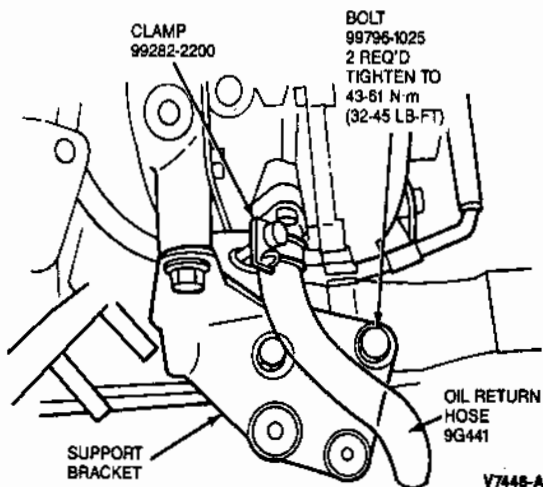
## REMOVAL AND INSTALLATION (Continued)

22. Pull downward on exhaust pipe and to the LH side of vehicle.



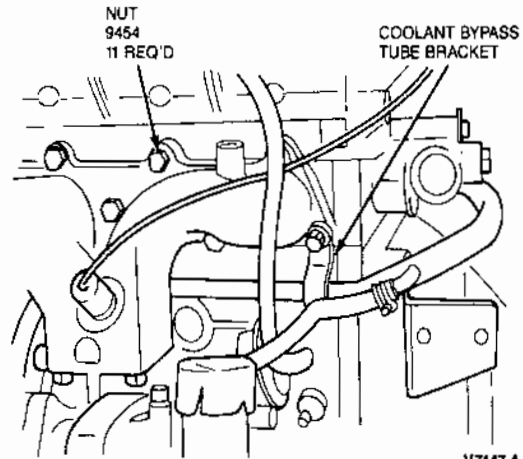
V7445-A

23. Disconnect oil return hose at turbocharger.  
 24. Disconnect coolant return hose at turbocharger.  
 25. Remove two retaining bolts from turbocharger support bracket.



V7446-A

26. Remove two bolts retaining coolant bypass tube outlet to water pump.  
 27. Lower vehicle.  
 28. Loosen retaining clamp bolt on coolant bypass tube at rear of cylinder head.  
 29. Remove 11 retaining nuts from exhaust manifold.  
 30. Pull coolant bypass tube bracket from exhaust stud and position tube out of the way.

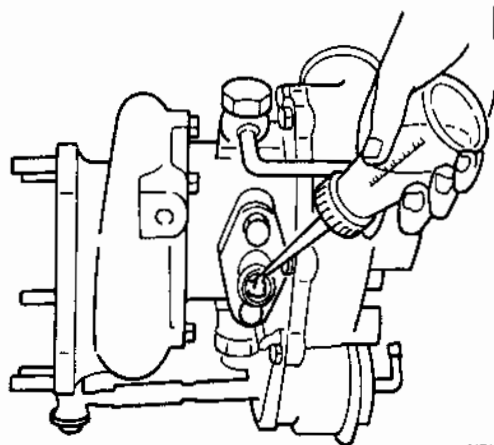


V7447-A

31. Grasp exhaust manifold, pull off studs and move assembly slightly to the RH side of engine compartment to clear cooling fan, and remove from vehicle.  
 32. Working on bench, remove four nuts retaining turbocharger to exhaust manifold, separate assembly and discard gasket.

**NOTE:** When re-installing the turbocharger, perform the following:

- Remove all gaskets and sealant.
- Use new gaskets.
- Add 25cc (1.53 cu in) of oil in the oil passage of the turbocharger.



V7452-A

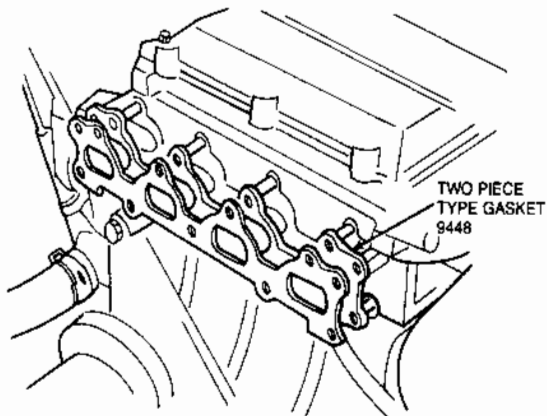
**Installation**

- Position new gasket on exhaust manifold and install turbocharger onto studs.
- Install four retaining nuts and tighten to 27-33 N·m (20-25 lb-ft).

**NOTE:** Use only the specified nuts to mount the turbocharger to the exhaust manifold.

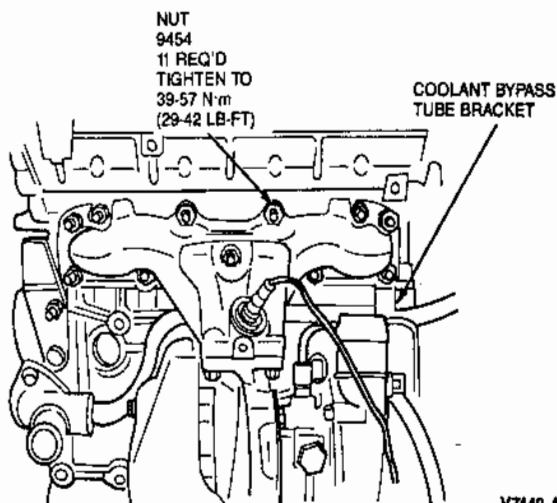
## REMOVAL AND INSTALLATION (Continued)

3. Remove oil supply line from turbocharger.
4. Position new exhaust gasket on cylinder head.



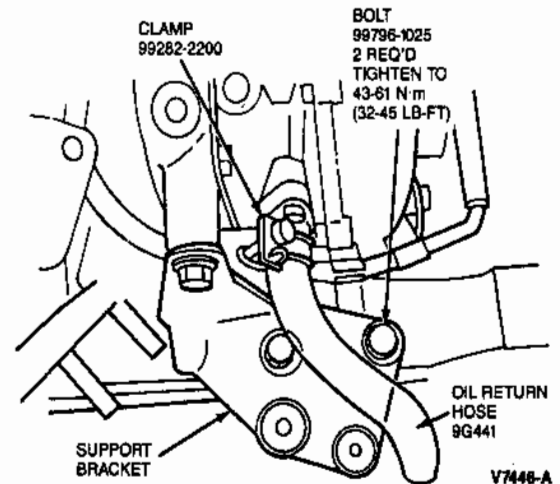
V7448-A

5. Carefully position turbocharger assembly in engine compartment and slide exhaust manifold onto studs.
6. Position heater coolant bypass tube bracket onto exhaust stud.
7. Install 11 retaining nuts onto exhaust manifold and tighten to 39-57 N-m (29-42 lb-ft).



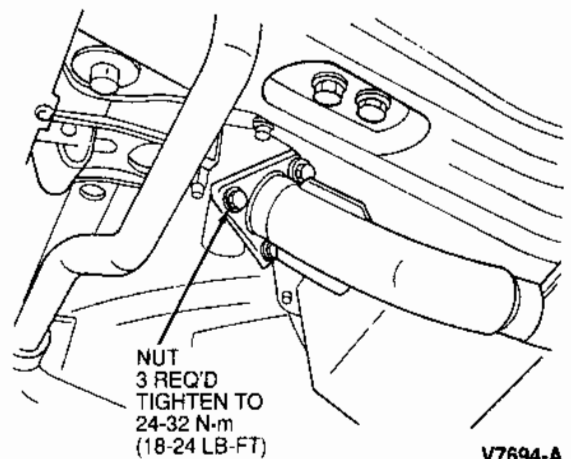
V7449-A

8. Tighten coolant bypass tube retaining clamp bolt securely.
9. Raise vehicle. Refer to Section 00-02.
10. Position new gasket and install two retaining bolts on coolant bypass tube outlet. Tighten bolts to 19-25 N-m (14-19 lb-ft).
11. Install two retaining bolts into turbocharger support bracket. Tighten bolts to 43-61 N-m (32-45 lb-ft).



V7446-A

12. Connect coolant return hose.
13. Connect oil return hose and secure with clamp.
14. Position exhaust pipe onto turbocharger and start nuts and washers.
15. Install two retaining bolts on exhaust hanger at engine.
16. Slide on two rubber exhaust hangers at catalyst.
17. Tighten exhaust pipe retaining nuts to 24-32 N-m (18-24 lb-ft).



V7694-A

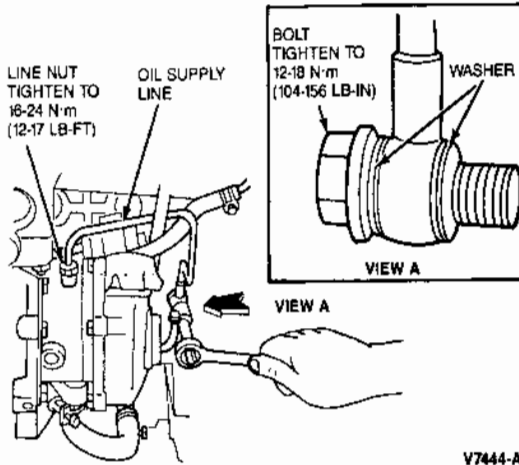
18. Lower vehicle.
19. Install retaining bolt and brass washers on oil supply line and carefully position oil line into vehicle and hand-start bolt into engine block. Connect oil line to turbocharger and finger-tighten. Tighten oil line bolt to 12-18 N-m (104-156 lb-in).

NOTE: Make sure that one brass washer is on each side of oil line fitting.



## REMOVAL AND INSTALLATION (Continued)

20. Tighten oil supply line on turbocharger to 16-24 N·m (12-17 lb-ft).



V7444-A

21. Connect coolant supply hose.  
 22. Position air cleaner duct tube on turbocharger and tighten clamp.  
 23. Install two screws retaining air cleaner duct tube.  
 24. Position power steering pump bracket on engine and install two retaining bolts and one retaining nut and tighten to 47-66 N·m (35-48 lb-ft).  
 25. Position power steering pump on mounting bracket and install through bolt and adjuster.  
 26. Connect lower radiator hose.  
 27. Install power steering belt. Refer to Section 03-05.  
 28. Position side heat shield and install three retaining bolts finger-tight.  
 29. Position upper heat shield and install two retaining bolts finger-tight.  
 NOTE: Feed oxygen sensor wire through upper heat shield. Install wire retainer under LH bolt.  
 30. Position lower heat shield and install three retaining bolts finger-tight.  
 31. Tighten all heat shield retaining bolts to 19-25 N·m (14-19 lb-ft).  
 32. Connect oxygen sensor and install connector into its retaining clip.  
 33. Position charge air cooler hose on turbocharger and secure with clamp.  
 34. Install throttle body air intake tube.  
 35. Connect negative battery cable.  
 36. Refill cooling system. Refer to Section 03-03.  
 37. If turbocharger was replaced, perform the following:

- a. Disconnect ignition coil.
- b. Crank engine for 20 seconds.
- c. Connect ignition coil.

- d. Start engine and run at idle for 30 seconds.
- e. Check for leaks.

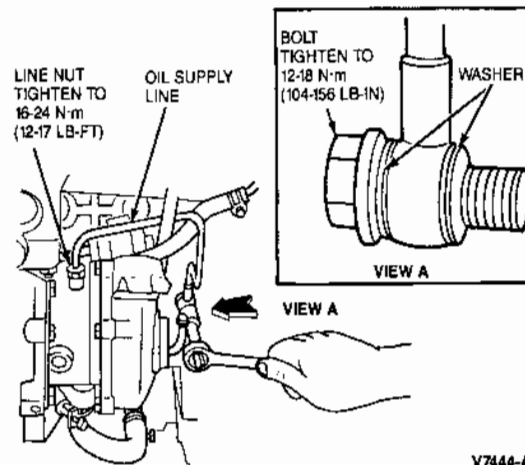
## Oil Supply Line

## Removal

1. Disconnect negative battery cable.
2. Remove two screws retaining air cleaner duct tube, loosen clamp at turbocharger and position duct tube out of the way.
3. Remove oil line fitting at turbocharger.
4. Remove bolt and brass sealing washer from oil line at engine block.
5. Remove oil supply line.

## Installation

1. Insert bolt through oil line, with a brass washer on each side of fitting.
2. Carefully position oil line into vehicle and hand-start bolt into engine block.
3. Connect oil line to turbocharger and finger-tighten.
4. Tighten oil line bolt to 12-18 N·m (104-156 lb-in).
5. Tighten oil line fitting to 16-24 N·m (12-17 lb-ft).



V7444-A

6. Install air cleaner duct tube to turbocharger and secure with clamp and install two retaining bolts.
7. Connect negative battery cable.
8. Start engine and check for leaks.

## Oil Return Hose

## Removal and Installation

1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Loosen clamps on each end of hose.
3. Remove hose.

**REMOVAL AND INSTALLATION (Continued)**

- To install, reverse Removal procedure.

**Coolant Supply Hose and Fitting****Removal**

- Disconnect negative battery cable.
- Drain cooling system. Refer to Section 03-03.
- Remove two screws retaining air cleaner duct tube, loosen clamp at turbocharger and position duct tube out of the way.
- Disconnect coolant hose from engine block.
- Raise vehicle on a hoist. Refer to Section 00-02.
- Disconnect coolant hose from turbocharger fitting.
- If necessary, remove bolt and brass sealing washers from turbocharger.

**Installation**

- If fitting was removed, install bolt through fitting with a brass sealing washer on each side of fitting.
- Install fitting onto turbocharger and tighten bolt securely.
- Route hose into position and connect one end to turbocharger fitting and secure with clamp.
- Lower vehicle.
- Connect coolant hose to engine block and secure with clamp.
- Install air cleaner duct to turbocharger and secure with clamp.
- Install two retaining bolts into air cleaner duct tube.
- Connect negative battery cable.
- Refill cooling system. Refer to Section 03-03.
- Start engine and check for leaks.

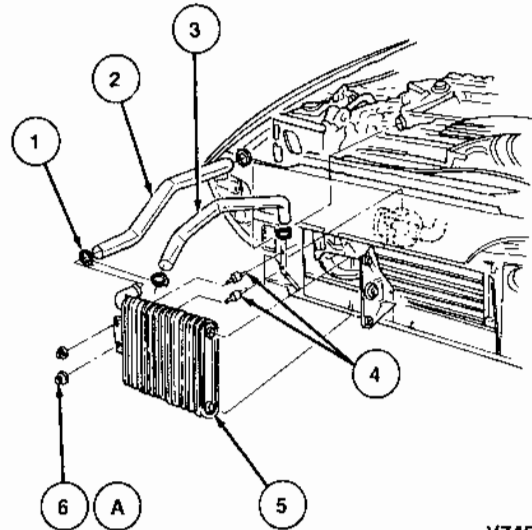
**Coolant Return Hose****Removal and Installation**

- Drain cooling system. Refer to Section 03-03.
- Loosen clamp on each end of hose.
- Remove coolant return hose.
- To install, reverse Removal procedure.

**Charge Air Cooler****Removal**

- Raise vehicle on a hoist. Refer to Section 00-02. Remove bumper assembly. Refer to Section 01-19.
- Loosen retaining clamps and disconnect charge air cooler hose from charge air cooler.

- Remove two nuts retaining charge air cooler to core support.
- Remove charge air cooler.



V7451-B

Item	Part Number	Description
1	13736	Clamp (4 Req'd)
2	6N650	Outlet Hose
3	6N802	Inlet Hose
4	0222 13363	Rubber insulators
5	6K775	Charge Air Cooler Assy
6A	—	Nut (2 Req'd)
A	—	Tighten to 9-13 N·m (7-10 lb-ft)

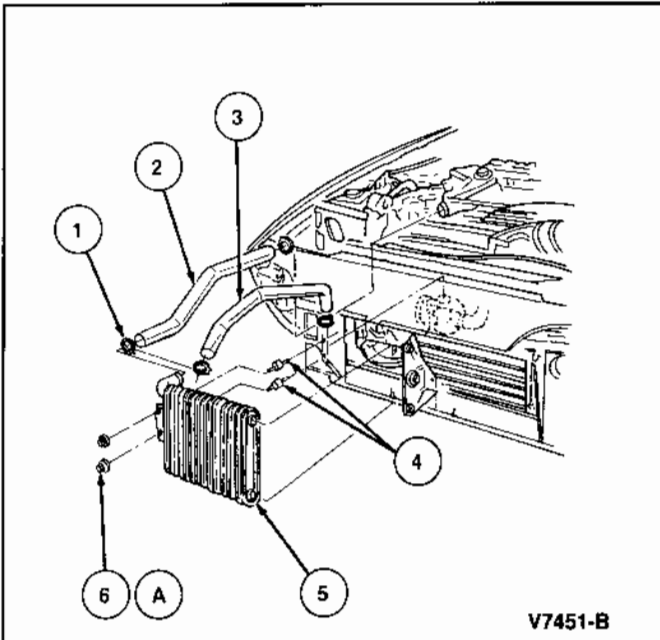
**Installation**

- Position charge air cooler and align rubber grommets.
- Install two retaining nuts on charge air cooler and tighten to 9-13 N·m (7-10 lb-ft).
- Connect charge air cooler hoses and tighten clamps securely.
- Install bumper assembly. Refer to Section 01-19.
- Lower vehicle and check operation.

**Charge Air Cooler Hoses****Removal**

- Open hood, loosen clamp and disconnect one end of charge air cooler hose being serviced.
- Raise vehicle on a hoist. Refer to Section 00-02.
- Loosen clamp and disconnect opposite end of charge air cooler hose being serviced.
- Note routing and remove charge air cooler hose.

## REMOVAL AND INSTALLATION (Continued)



V7451-B

Item	Part Number	Description
1	13736	Clamp (4 Req'd)
2	6N650	Outlet Hose
3	6N802	Inlet Hose
4	0222 13363	Rubber Insulators
5	6K775	Charge Air Cooler Assy
6A	—	Nut (2 Req'd)
A	—	Tighten to 9-13 N·m (7-10 lb-ft)

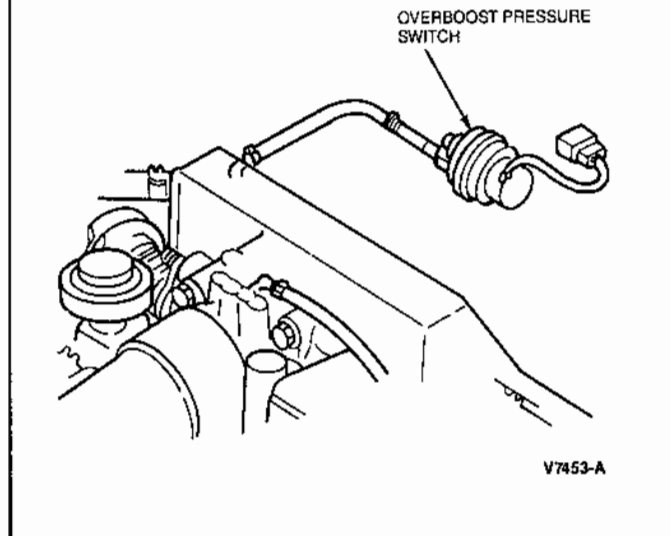
**Installation**

1. Route charge air cooler hose through core support in its original position.
2. Connect hose to charge air cooler and secure with retaining clamp.
3. Lower vehicle.
4. Connect charge air cooler hose and secure with retaining clamp.
5. Check operation.

**Overboost Pressure Switch****Removal and Installation**

1. Disconnect electrical connector.

2. Disconnect vacuum hose.
3. Remove switch from retaining clip.
4. To install, reverse Removal procedure.



V7453-A

**SPECIFICATIONS****TORQUE SPECIFICATIONS**

Description	N·m	Lb·Ft
Exhaust Manifold to Cylinder Head Nuts	39-57	29-42
Turbocharger-to-Exhaust Manifold Nuts	27-33	20-25
Exhaust Shield Bolts	19-25	14-19
Exhaust Pipe to Turbocharger	24-32	18-24
Oil Supply to Turbocharger	16-24	12-17
Turbocharger Support Bracket Bolts	43-61	32-45
Oil Supply Line-to-Engine Block Bolt	12-18	104-156 (Lb·In)
Power Steering Pump Bracket Bolts	47-66	35-48
Coolant Bypass Tube Bolts	19-25	14-19
Charge Air Cooler Nuts	9-13	7-10