

Engine Cooling - TDV8 3.6L Diesel - Cooling System Partial Draining, Filling and Bleeding

General Procedures



WARNING: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.


CAUTIONS:



The engine cooling system must be maintained with the correct concentration and type of anti-freeze solution to prevent corrosion and frost damage. Failure to follow this instruction may result in damage to the engine




Engine coolant will damage the paint finished surfaces. If spilt, immediately remove the coolant and clean the area with water.

1.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

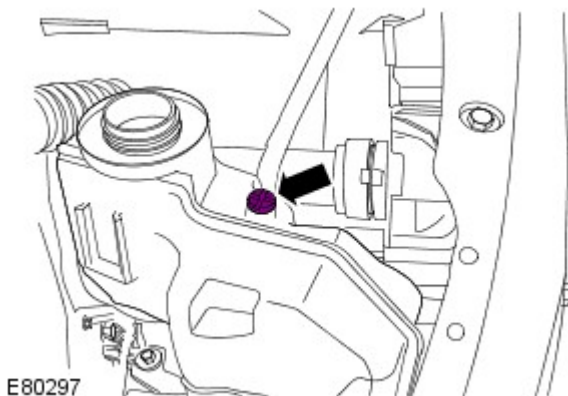
2. Set the heater controls to HOT.

3. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

4.  **WARNING:** Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

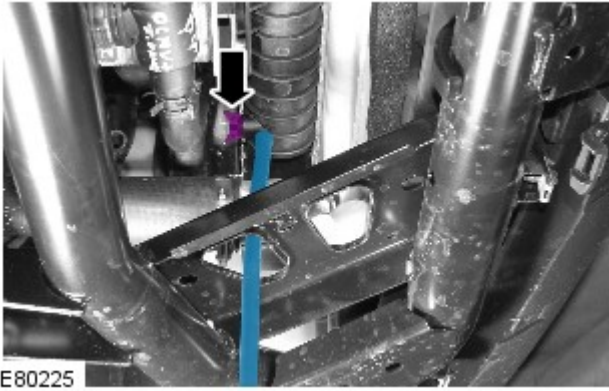
Remove the coolant expansion tank cap.

5. Loosen the coolant expansion tank bleed screw.

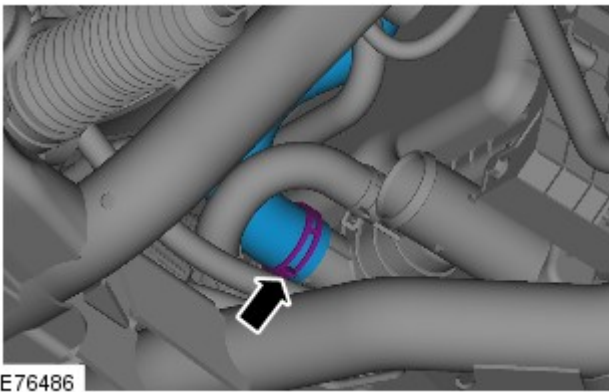


6. Remove the radiator splash shield.
For additional information, refer to: Radiator Splash Shield (501-02, Removal and Installation).

7. Drain the coolant from the radiator.
 - Position a container to collect the fluid.
 - Attach a hose to the radiator drain tap. Open the tap.



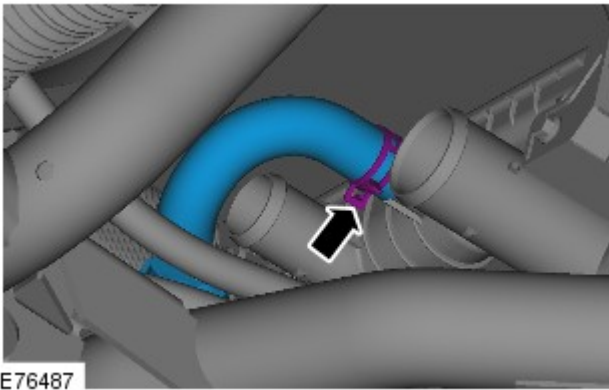
8. Close the radiator drain tap and remove the hose.



9.  **WARNING: Eye protection must be worn.**

Disconnect the radiator lower hose from the radiator.

- Release the clip.
- Allow the coolant to drain.



10.  **WARNING: Eye protection must be worn.**

Disconnect the oil cooler multi valve hose from the radiator.

- Allow the coolant to drain.

11.  **WARNING: Eye protection must be worn.**

Disconnect the coolant feed hose from the transmission fluid cooler.

- Allow the coolant to drain.

12. Connect the coolant hoses.

- Remove the container.


13. Connect the battery ground cable.

For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

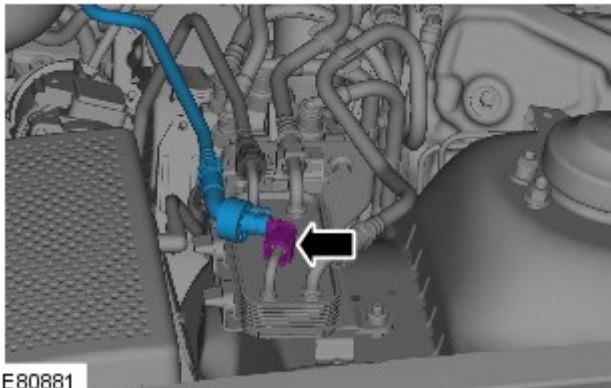
14. Connect exhaust extraction hoses to the tail pipes.

15.  CAUTION: Anti-freeze concentration must be maintained at 50%.

Fill the cooling system expansion tank until the coolant level becomes static with in the "COLD FILL RANGE".


16.  CAUTION: Make sure the coolant level remains above the "COLD FILL RANGE" lower level mark.


Start the engine and allow to idle.



17.  WARNING: Eye protection must be worn.

CAUTIONS:

 Engine coolant will damage the paint finished surfaces. If spilt, immediately remove the coolant and clean the area with water.

 Since injury such as scalding could be caused by escaping steam or coolant, make sure the vehicle cooling system is cool prior to carrying out this procedure

Disconnect the fuel cooler coolant return line.

- Allow any trapped air to escape.

18. Connect the fuel cooler coolant return line.


19. When coolant runs from the expansion tank bleed point bubble-free, tighten the bleed screw.

20. Add coolant to the expansion tank until the coolant level is 25 mm (0.98 inch) above the "COLD FILL RANGE" upper mark.

21. Hold the engine speed at 2,000 RPM for 25 seconds.

22. Allow the engine to idle for 30 seconds.

23. CAUTIONS:

 Observe the engine temperature gauge. If the engine starts to over-heat switch off immediately and allow to cool. Failure to follow this instruction may cause damage to the vehicle


 Make sure the coolant level remains above the "COLD FILL RANGE" lower level mark.

Repeat the above 2 steps 3 times or until hot air is emitted from the heater.

24. Allow the engine to idle for 30 seconds.


25. Add coolant to the expansion tank until the coolant level is 25 mm (0.98 inch) above the "COLD FILL RANGE" upper mark.


- Install the coolant expansion tank cap.

26.  CAUTION: Observe the engine temperature gauge. If the engine starts to over-heat switch off immediately and allow to cool. Failure to follow this instruction may cause damage to the vehicle

Start and run the engine until the thermostat opens.

- Switch the engine off and allow to cool.

27.  WARNING: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

 CAUTION: If topping up the cooling system when HOT, the HOT fill level with the coolant expansion tank cap removed is significantly higher, 50 mm (2 inches) than the COLD fill level. Failure to compensate for this may lead to significant under filling of the cooling system and may lead to incorrect diagnosis and coolant loss.

Check and top-up the coolant if required.

28. Disconnect the exhaust extraction hoses from the tail pipes.

29. Clean any spilt coolant from the vehicle.

30. Install the engine undershield.
For additional information, refer to: Radiator Splash Shield (501-02, Removal and Installation).