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2020.0 DEFENDER (LE), 303-03C

ENGINE COOLING – INGENIUM I6 3.0L PETROL

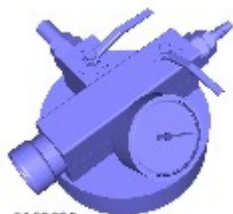
COOLING SYSTEM DRAINING AND VACUUM FILLING

[G2344646]

GENERAL PROCEDURES

26.10.05	COOLING SYSTEM DRAINING AND VACUUM FILLING	2000 CC, INGENIUM DIESEL	1.00	USED WITHINS	
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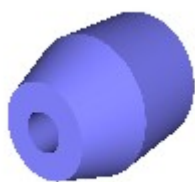
SPECIAL TOOL(S)



E169995

HU-919

Coolant System Vacuum Refill Kit



E166365

JLR-303-1634

Adaptor, Cooling System Vacuum Refill Kit

DRAINING

WARNING:

Injury such as scalding could be caused by escaping steam or coolant. Make sure the vehicle cooling system is cool prior to completing out this procedure.

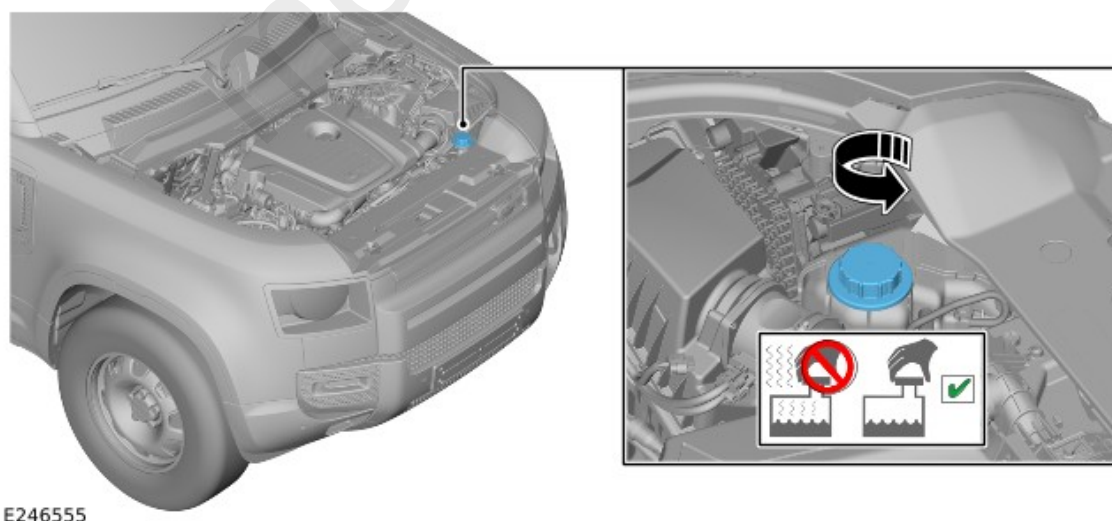
CAUTIONS:

- The engine cooling system must be maintained with the correct concentration and type of engine coolant 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.
- Never remove the coolant expansion tank filler cap under any circumstances while the engine is operating. Failure to follow this instruction may result in damage to the engine.
- Be prepared to collect escaping coolant.

NOTES:

- This procedure contains some variation in the illustrations depending on the vehicle specification, but the essential information is always correct.
- This procedure contains illustrations showing certain components removed to provide extra clarity.

1.



Remove the coolant expansion tank filler cap.

2.

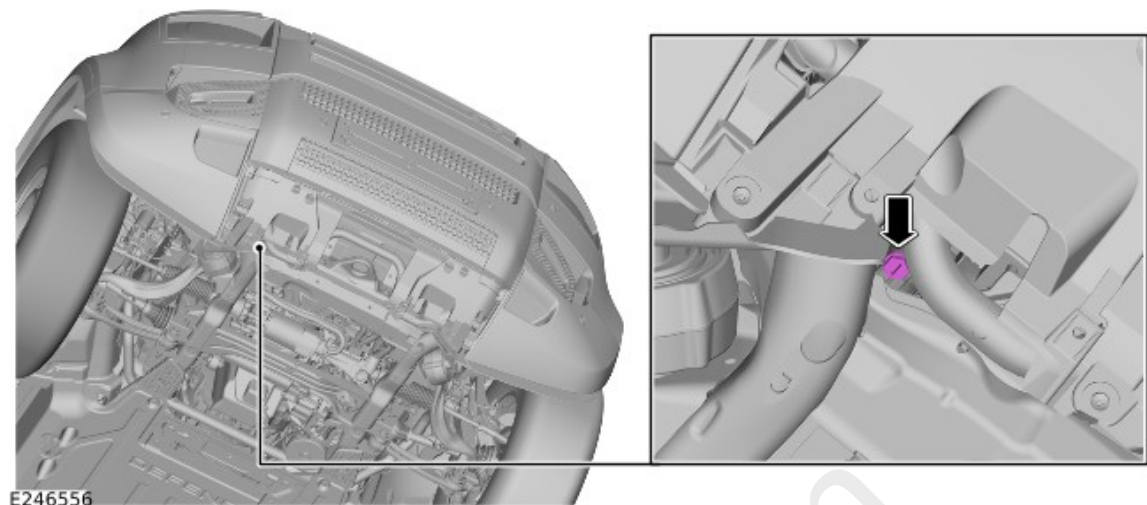
Raise and support the vehicle on a suitable 2 post lift.

Refer to: [Jacking and Lifting](#) (100-02 Jacking and Lifting, Description and Operation).

3. Remove the engine undershield.

Refer to: [Specifications](#) (501-02 Front End Body Panels, Specifications).

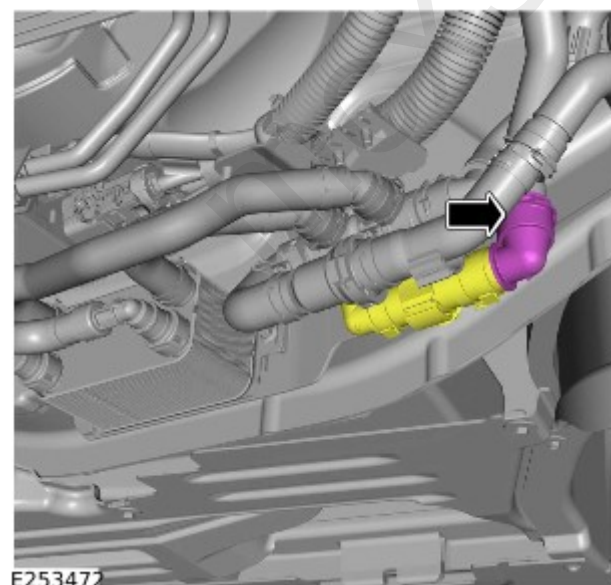
4.



- Release the radiator drain plug.
- Allow the coolant to drain into a suitable container.
- Tighten the radiator drain plug.

Torque: 3.5Nm

5.



- Disconnect the transmission fluid cooler coolant hose.
- Allow the coolant to drain into a suitable container.
- Connect the transmission fluid cooler coolant hose.

FILLING

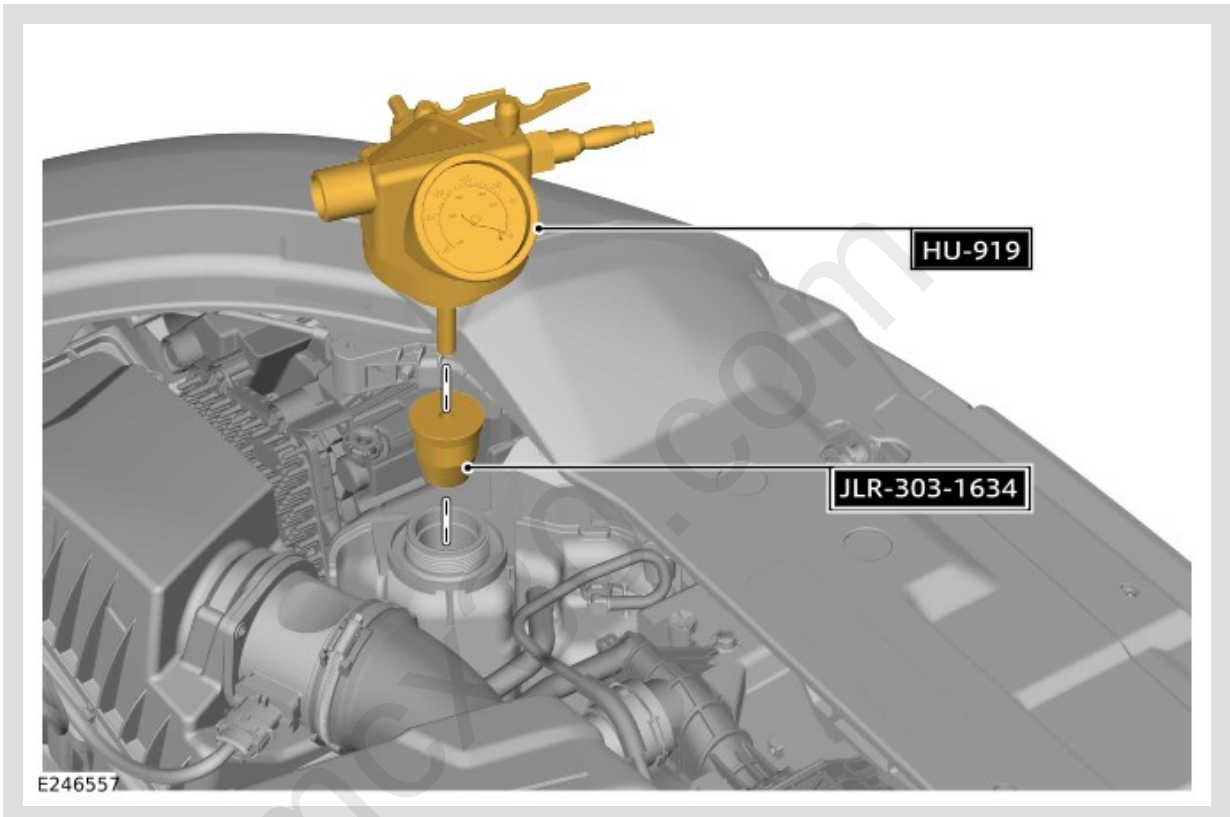
1. Install the engine undershield.

Refer to: [Specifications](#) (501-02 Front End Body Panels, Specifications).

2. Prepare a sufficient amount of coolant meeting Jaguar Land Rover (JLR) specifications.

Refer to: [Specifications](#) (303-03C Engine Cooling - INGENIUM I6 3.0L Petrol, Specifications).

- 3.

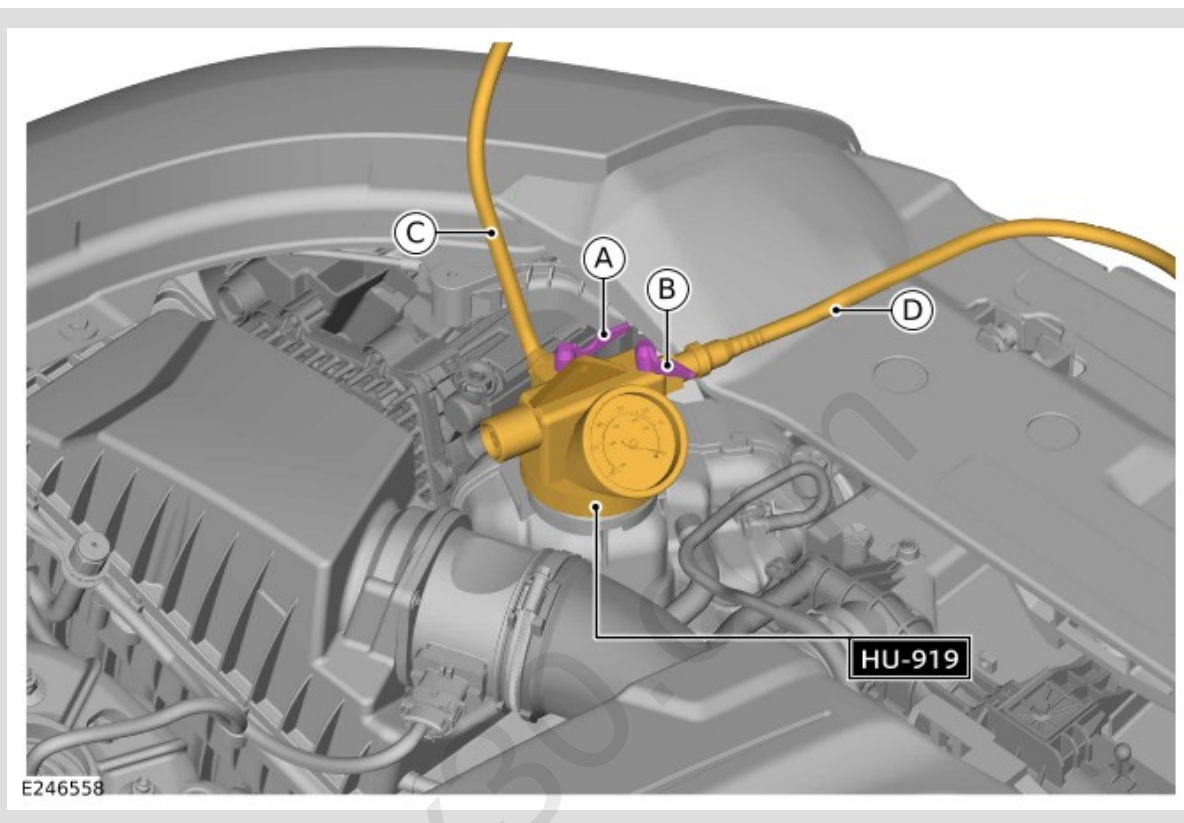


Install the special tool HU-919 and JLR-303-1634 to the coolant expansion tank.

Special Tool(s): [HU-919](#), [JLR-303-1634](#)

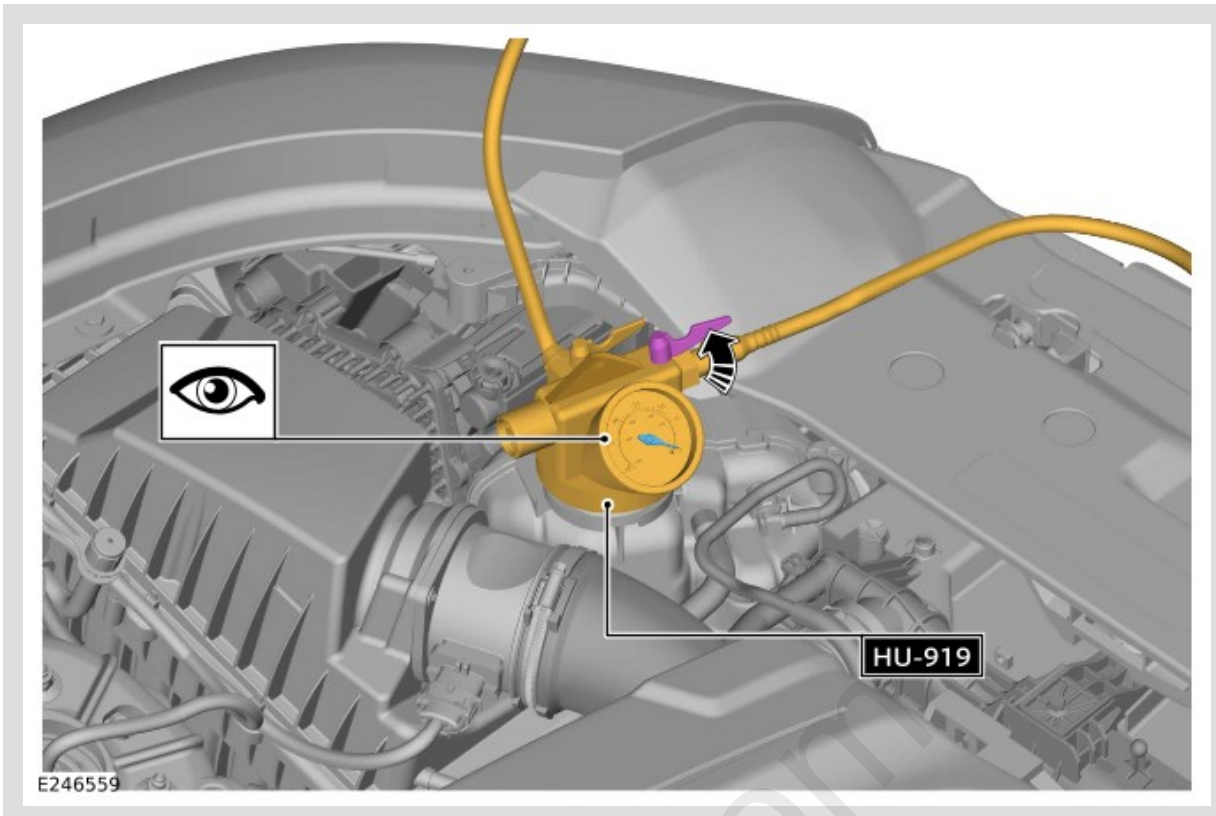
 NOTE:

- The special tool HU-919, needs an air pressure of 6 bar to 8 bar (87 psi to 116 psi) to operate correctly.
- Small diameter or long air supply hoses may restrict airflow to the HU-919 vacuum refill tool.



- Close the coolant inlet and air supply valves (1) on the special tool HU-919.
- Attach the coolant inlet hose from a container of coolant mixture to the special tool HU-919 (2).
- Connect a regulated compressed air supply to the special tool HU-919 (2).

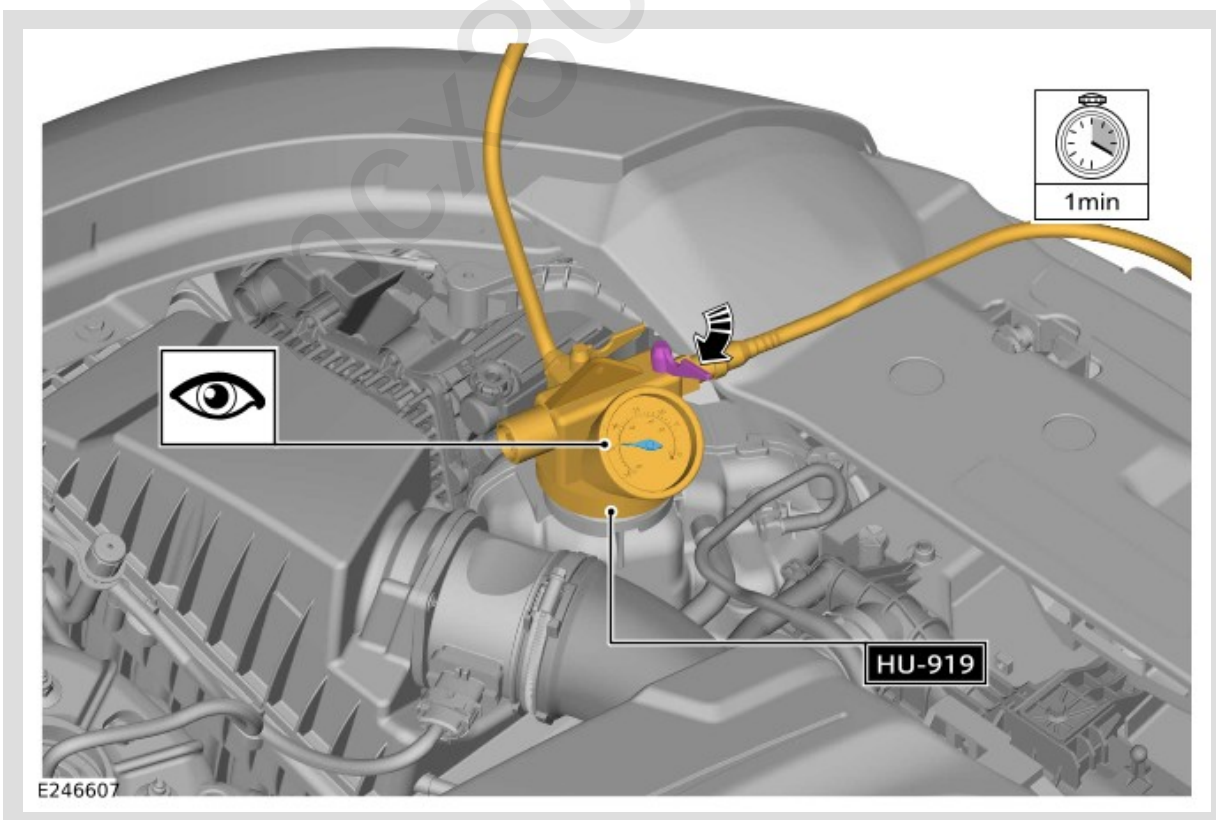
5.



Open the air supply valve until -0.8 bar is shown on the gauge of the special tool.

Special Tool(s): [HU-919](#)

6.

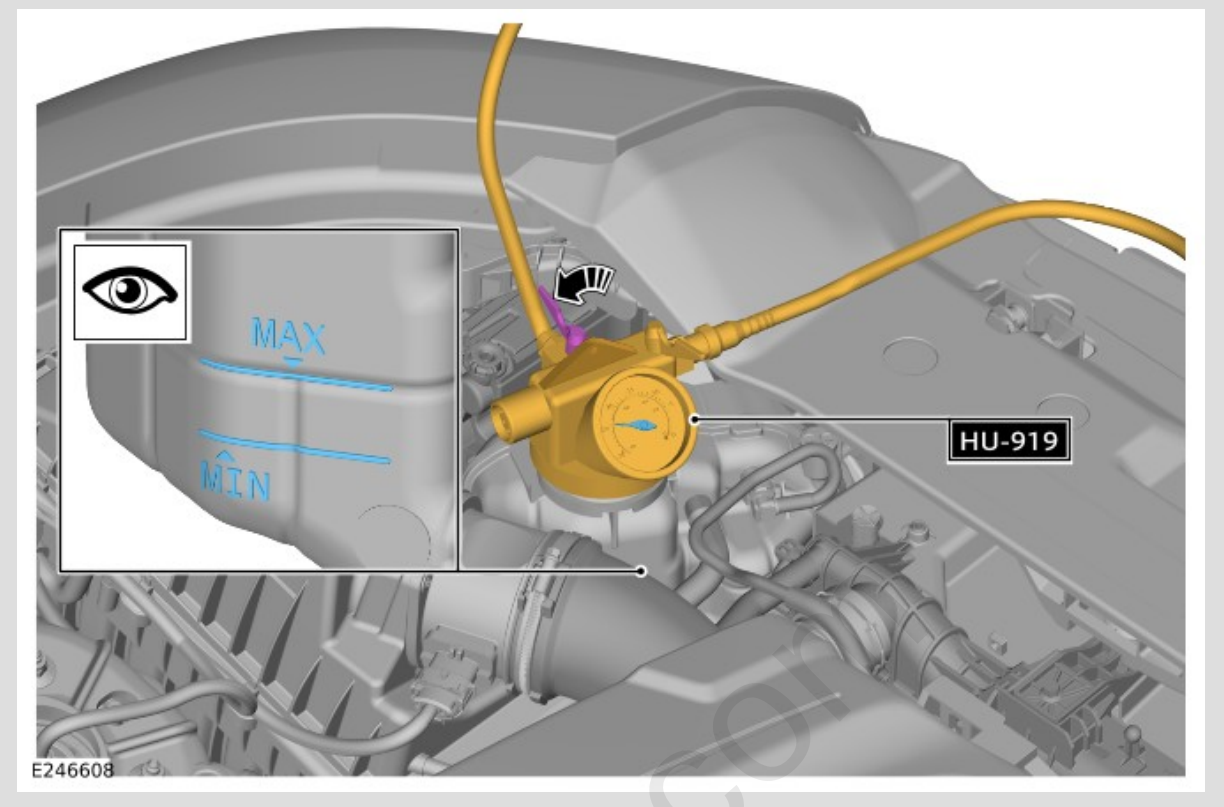


- When -0.8 bar is displayed on the vacuum refill tool gauge, close the air supply valve.

Special Tool(s): [HU-919](#)

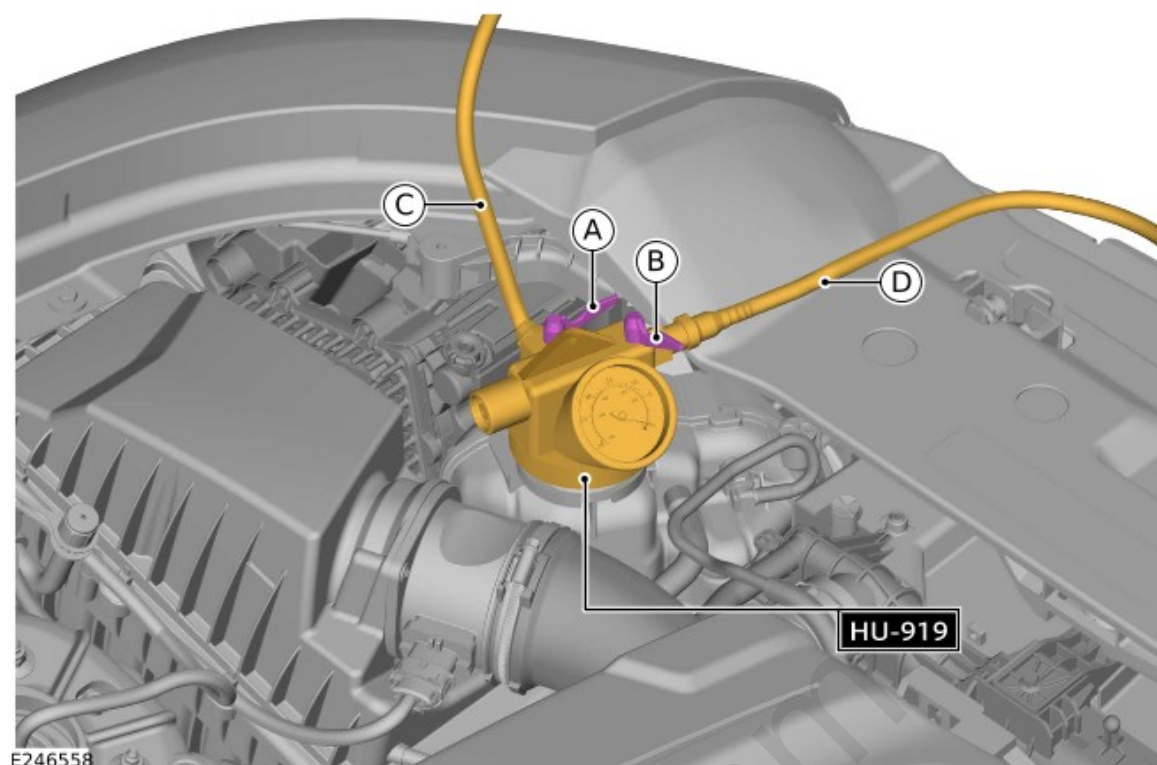
- Wait 1 minute to check if the cooling system holds the vacuum.

7.



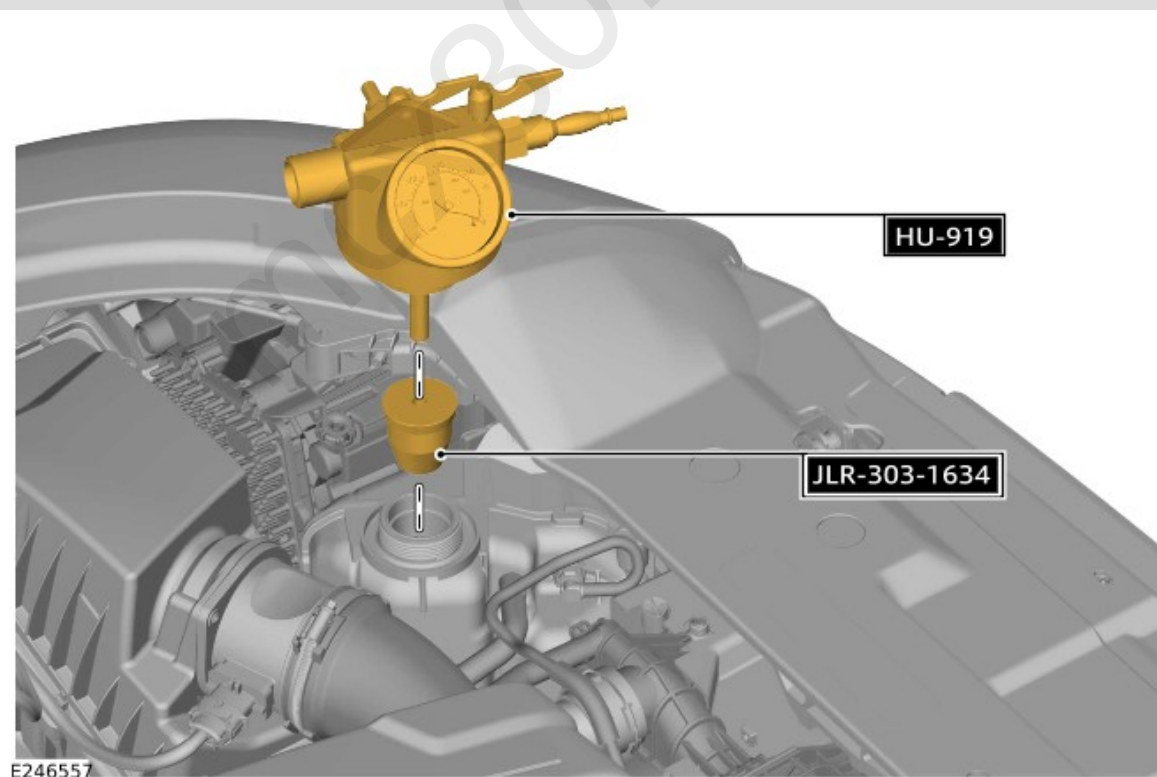
- Open the coolant supply valve and allow the coolant to be drawn into the system.
Special Tool(s): [HU-919](#)
- Close the coolant supply valve when the coolant expansion tank 'MAX' mark is reached or coolant movement has ceased.

8.



Release the coolant inlet hose and disconnect the air supply (2).

9.



Remove the special tools HU-919 and JLR-303-1634 from the expansion tank.

Special Tool(s): [HU-919](#), [JLR-303-1634](#)

10.

Install the coolant expansion tank filler cap.

11.



WARNING:

Never start the engine or leave it running, when the vehicle is in an enclosed space without adequate ventilation. Exhaust gases are poisonous and inhalation can cause unconsciousness and potentially lead to serious injury or death.

Install an exhaust gas extraction hose to the exhaust pipe of the vehicle.

12.



CAUTION:

Regularly check the engine temperature warning lamp and the instrument panel. If the warning lamp is displayed, switch the engine off immediately and allow to cool. Failure to follow this instruction may cause damage to the vehicle.

- Start the engine and allow to idle.
- Select sand driving mode.
- Set the heating system to 'MAX' temperature and the blower speed control to 'MAX' speed. Set the air distribution to the instrument panel vents.

13.

Hold the engine speed between 2500 rpm and 3500 rpm, until warm air is expelled from the heater core.

14.

Switch the engine off and allow to cool.

15.

Clean any spilt coolant from the vehicle.

16.

Remove the exhaust gas extraction hose from the vehicle.

17.

Check and top-up the coolant if required.

Refer to: [Specifications](#) (303-03C Engine Cooling - INGENIUM I6 3.0L Petrol, Specifications).