

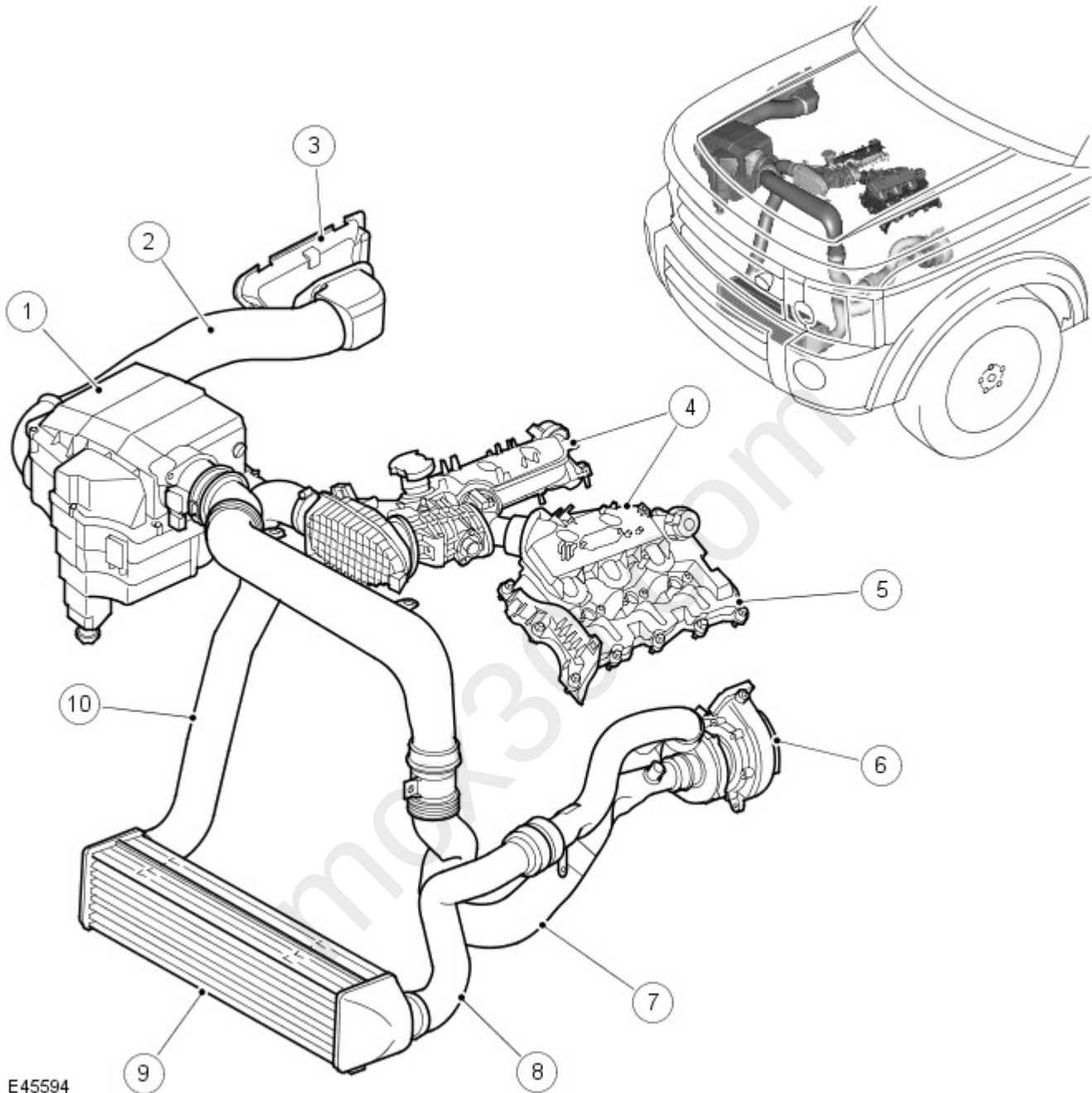
**Intake Air Distribution and Filtering - TDV6 2.7L Diesel -****General Specification**

| <b>Item</b>                          | <b>Specification</b>                                                                                 |
|--------------------------------------|------------------------------------------------------------------------------------------------------|
| Air cleaner                          | Mann and Hummel fitted with replaceable paper element, air flow meter and optional service indicator |
| <b>Air flow meter:</b>               |                                                                                                      |
| Make                                 | Denso                                                                                                |
| Location                             | Air intake duct                                                                                      |
| <b>Service indicator - Optional:</b> |                                                                                                      |
| Type                                 | Transparent body giving visual indication of filter element condition                                |
| Location                             | In the filter housing adjacent to the air intake duct                                                |

# Intake Air Distribution and Filtering - TDV6 2.7L Diesel - Intake Air Distribution and Filtering

Description and Operation

Intake Air Distribution



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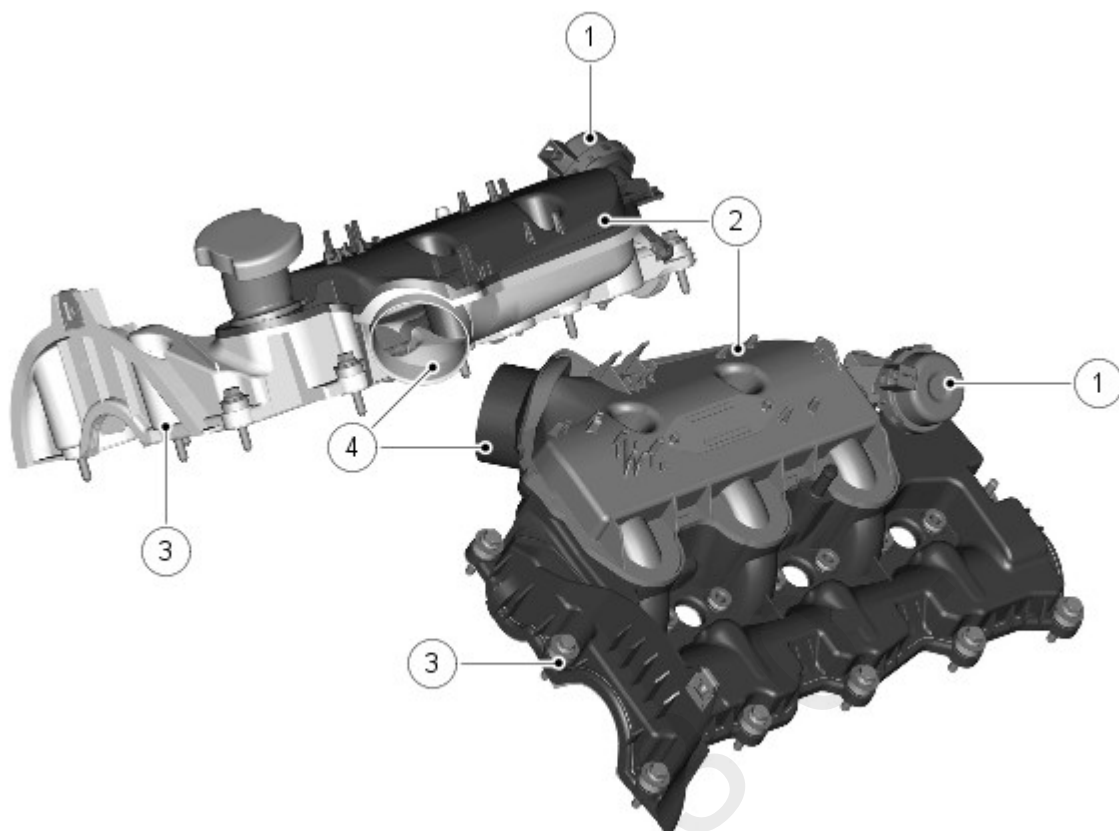
| Item | Part Number | Description                                     |
|------|-------------|-------------------------------------------------|
| 1    | -           | Air filter box                                  |
| 2    | -           | Porous duct                                     |
| 3    | -           | Air intake duct                                 |
| 4    | -           | Air intake manifolds                            |
| 5    | -           | Camshaft cover                                  |
| 6    | -           | Turbo charger                                   |
| 7    | -           | Air filter to turbo pipe                        |
| 8    | -           | Turbo to charge air cooler pipe                 |
| 9    | -           | Charge air cooler                               |
| 10   | -           | Charge air cooler to intake manifold pipe       |
| 11   | -           | Filter minder (optional fit for dusty climates) |

The 2.7 Liter Diesel air intake and distribution system comprises:

- Wing mounted intake duct
- A filter minder sensor
- Camshaft cover mounted intake manifolds (x2)
- Charge air cooler

- Turbo charger

Air is drawn in from the vehicle exterior via the wing mounted intake duct, along a porous duct inside the wing to the air filter box intake. Once the air has passed through the air filter it is drawn along a duct to the turbo charger. From the turbo charger the air is forced through the charge air cooler up to the electric throttle assembly and then to the inlet manifold assembly.



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| Item | Part Number | Description                                 |
|------|-------------|---------------------------------------------|
| 1    | -           | Port deactivation control valves (not used) |
| 2    | -           | Air intake manifolds                        |
| 3    | -           | Cylinder head covers                        |
| 4    | -           | Air intake ducts                            |

# Intake Air Distribution and Filtering - TDV6 2.7L Diesel - Intake Air Distribution and Filtering

Diagnosis and Testing

## Principles of Operation

For a detailed description of the intake air distribution and filtering system and operation, refer to the relevant Description and Operation section of the workshop manual. REFER to: [Intake Air Distribution and Filtering](#) (303-12A Intake Air Distribution and Filtering - TDV6 2.7L Diesel, Description and Operation).

## Inspection and Verification



**CAUTION:** Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault and may also cause additional faults in the vehicle being checked and/or the donor vehicle.

• **NOTE:** Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

1. **1.** Verify the customer concern.
2. **2.** Visually inspect for obvious signs of mechanical or electrical damage.

### Visual Inspection

| Mechanical                                                                                                                                                                                                                                                                                                                                                                                   | Electrical                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Hoses and ducts condition and installation</li> <li>● Air cleaner element condition and installation</li> <li>● Restricted air intake</li> <li>● Vacuum hoses condition and installation</li> <li>● Pipework to turbocharger condition and installation</li> <li>● Turbocharger condition and installation</li> <li>● Charge air coolers</li> </ul> | <ul style="list-style-type: none"> <li>● Fuse(s)</li> <li>● Wiring harness</li> <li>● Loose or corroded electrical connector(s)</li> <li>● Mass Air Flow (MAF) sensor</li> <li>● Air Charge Temperature (ACT) sensor</li> <li>● Manifold absolute pressure (MAP) sensor</li> <li>● Intake Air Temperature (IAT) sensor</li> <li>● Intake air shut-off throttle solenoid</li> </ul> |

3. **3.** If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **4.** If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

## Symptom Chart

| Symptom                              | Possible Causes                                                                                                                                                                                                            | Action                                                                                                                                                                                                                                                               |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle does not start/hard starting | <ul style="list-style-type: none"> <li>● Restricted/Blocked air intake</li> <li>● Restricted/Blocked air cleaner element</li> </ul>                                                                                        | Clear the restriction. Replace the air cleaner element as necessary.                                                                                                                                                                                                 |
| Poor performance                     | <ul style="list-style-type: none"> <li>● Turbocharger fault</li> <li>● Throttle body fault</li> <li>● Intercooler hoses</li> </ul>                                                                                         | Check the turbocharger. Check the intake air shutoff throttle function (make sure the throttle body returns to the open position). Check the intercooler hoses.                                                                                                      |
| Excessive intake noise               | <ul style="list-style-type: none"> <li>● Intake air leak after the turbocharger</li> <li>● Intake pipe disconnected/damaged after the air cleaner</li> <li>● Air cleaner assembly incorrectly assembled/damaged</li> </ul> | Check the joint between the air intake elbow and the intake air shutoff throttle. Check the joints between the throttle body outlets and the intake manifolds. Check the charge air cooler seals. Check the intake system and hoses for correct installation/damage. |

## DTC Index

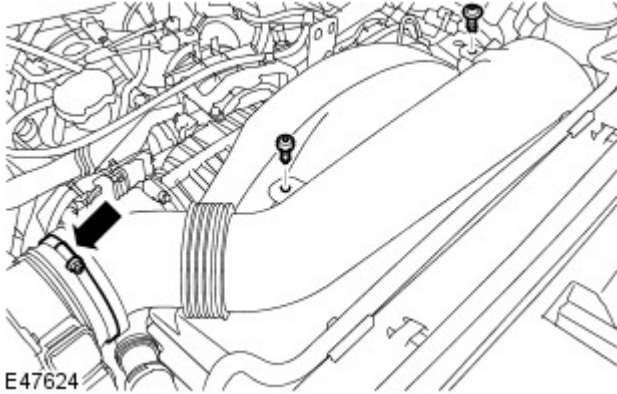
For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00. REFER to: [Diagnostic Trouble Code \(DTC\) Index - TDV6 2.7L Diesel, DTC: Engine Control Module \(PCM\)](#) (100-00 General Information, Description and Operation).

# Intake Air Distribution and Filtering - TDV6 2.7L Diesel - Air Cleaner

Removal and Installation

## Removal

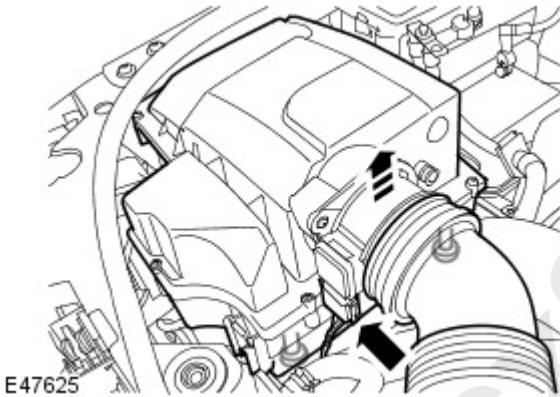
1. Disconnect the battery ground cable.  
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).



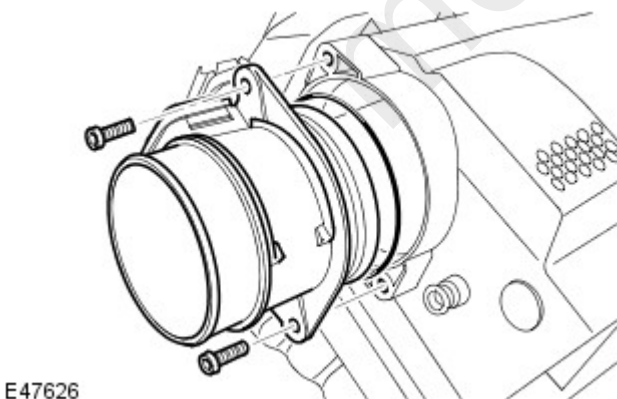
2. **CAUTION:** When removing the air cleaner outlet pipe, make sure the rubber seal, on the LH side lower air pipe, does not become dislodged. Make sure the seal is properly seated onto the lower pipe.

Remove the air cleaner outlet pipe.

- Remove the 2 screws.
- Loosen the clip.



3. Remove the air cleaner assembly.
  - Disconnect the electrical connector.
  - Release the air cleaner from the 2 grommets.



4. **NOTE:** Do not disassemble further if the component is removed for access only.

Remove the manifold absolute pressure (MAP) sensor.

- Remove the 2 Torx screws.
- Remove the O-ring seal.

## Installation

1. **CAUTION:** When installing the air cleaner outlet pipe, make sure it is correctly seated onto the lower air pipe, so that an air-tight seal is made.

- **NOTE:** When installing the air cleaner, make sure the locating pegs fit securely into the grommets.

To install, reverse the removal procedure.

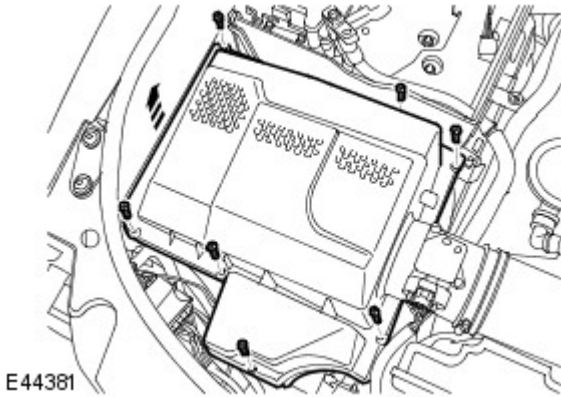


# Intake Air Distribution and Filtering - TDV6 2.7L Diesel - Air Cleaner Element

Removal and Installation

## Removal

1. Release the air cleaner housing cover.
  - Remove the 7 screws.
2. Remove the air cleaner element.



## Installation

1. To install, reverse the removal procedure.
  - Clean the base of the air cleaner.
  - Check that the drain valve is clear.

# Intake Air Distribution and Filtering - TDV6 2.7L Diesel - Charge Air Cooler

Removal and Installation

## Removal

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. Disconnect the battery ground cable.  
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
3. Remove the radiator.  
For additional information, refer to: [Radiator](#) (303-03A Engine Cooling - TDV6 2.7L Diesel, Removal and Installation).
4. Remove the charge air cooler.
  - Remove the 2 retaining pins.



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## Installation

1. Install the charge air cooler.
  - Install the 2 retaining pins.
2. Install the radiator.  
For additional information, refer to: [Radiator](#) (303-03A Engine Cooling - TDV6 2.7L Diesel, Removal and Installation).
3. Connect the battery ground cable.  
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).