

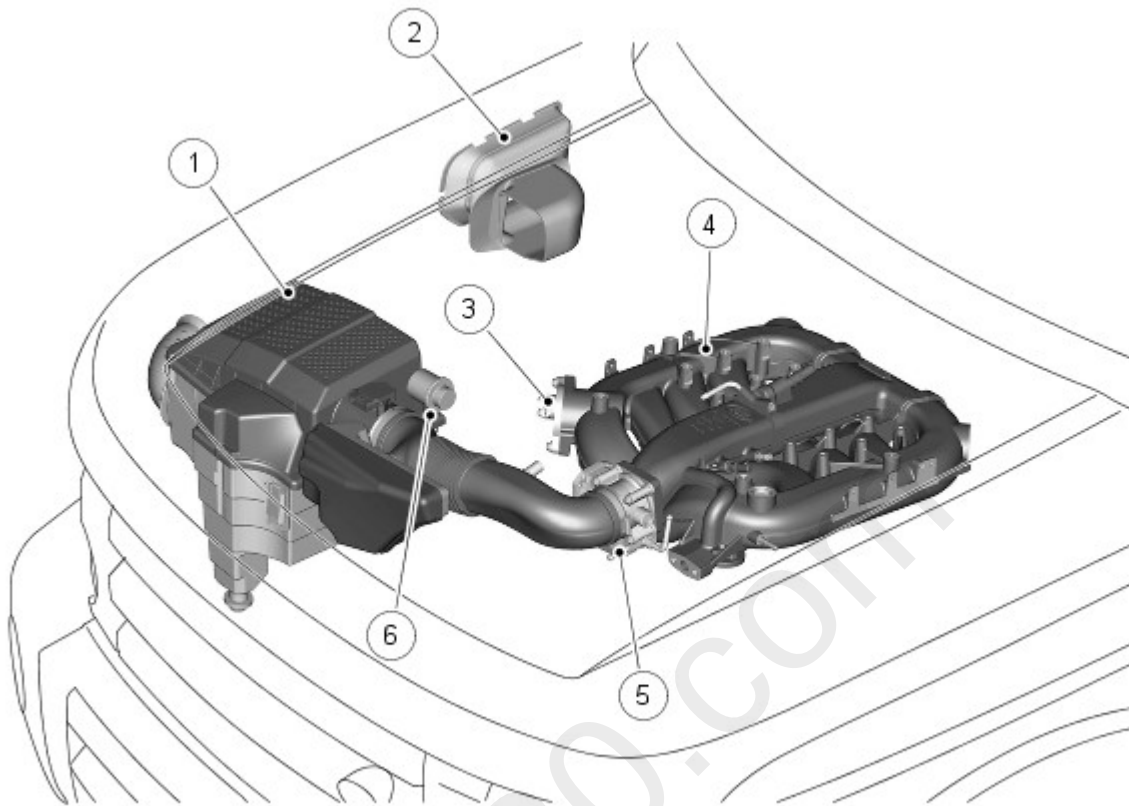
Intake Air Distribution and Filtering - V6 4.0L Petrol -**General Specification**

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

Intake Air Distribution and Filtering - V6 4.0L Petrol - Intake Air Distribution and Filtering

Description and Operation

4 Liter V6 Petrol Intake Air Distribution and Filtering Component Location



E45603

Item	Part Number	Description
1	-	Air filter box
2	-	Air intake
3	-	Intake manifold tuning valve (IMTV)
4	-	Intake manifold
5	-	Electronic throttle
6	-	Filter minder (optional fit)

The 4.0 Liter V6 engine air intake and distribution system comprises:

- Air filter box
- Air intake
- Intake manifold
- Electronic throttle

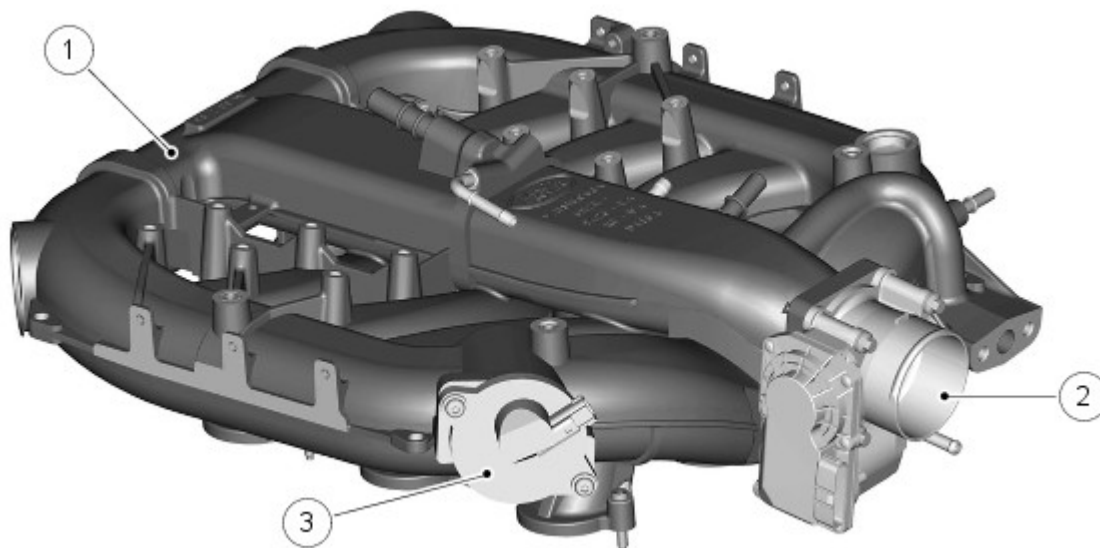
AIR FILTER BOX

The air filter box is located in the front of the engine bay on the inside of the RH front wing. Air is drawn from the air intake in the wing through the wing cavity and into the air filter box.

After the air filter box there is a resonator located after the Mass Air flow/ Intake Air Temperature (MAF/IAT) sensor.

INTAKE MANIFOLD

Air Intake Manifold



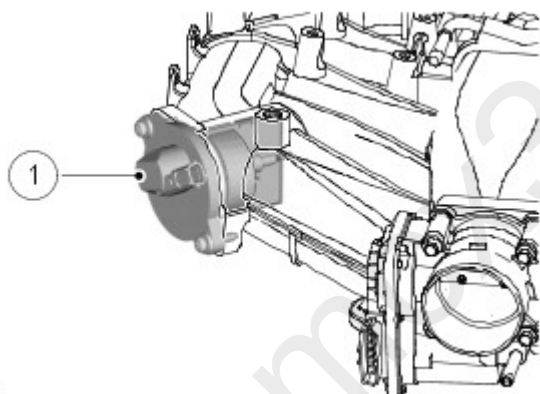
E45604

Item	Part Number	Description
1	-	Intake manifold
2	-	Electronic throttle
3	-	Inlet manifold tuning (IMTV)

The intake manifold is located on top of the engine between the two cylinder banks. The manifold is manufactured from an aluminium alloy. The intake manifold comprises a central chamber with six tracts leading to the inlet ports on the cylinder heads.

INTAKE MANIFOLD TUNING VALVE (IMTV)

Intake Manifold Tuning Valve



E45605

Item	Part Number	Description
1	-	Intake Manifold Tuning Valve (IMTV)

Intake Manifold Tuning Valve

The Intake Manifold Tuning Valve (IMTV) is located at the front right hand side of the air intake manifold. The IMTV is controlled by a PWM signal from the ECM

For additional information, refer to: [Electronic Engine Controls](#) (303-14C Electronic Engine Controls - V6 4.0L Petrol, Description and Operation).

. The IMTV moves a plate within the inlet manifold to allow or block sonic pulses between the split manifold halves. This, in effect, extends the inlet runners and optimises for better low rpm torque.

Intake Air Distribution and Filtering - V6 4.0L Petrol - 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](#) (303-12C Intake Air Distribution and Filtering - V6 4.0L Petrol, 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
• Hoses and ducts (damage/connections) • Air cleaner element (contaminated/blocked) • Restricted air intake • Supercharger • Supercharger (cooling fan) drive belt • Supercharger seals and gaskets • Charge air coolers (damage/connection)	• Mass Air Flow (MAF) sensor • Manifold Absolute Pressure (MAP) sensor • Manifold Absolute Pressure/Temperature (MAPT) sensor • Throttle body • Harness (security/damage) • Connections (security/damage)

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/poor performance	• Restricted/Blocked air intake • Restricted/Blocked air cleaner element	Clear the restriction. Replace the air cleaner element as necessary. Refer to the relevant workshop manual section.
Excessive intake noise	• Intake pipe disconnected/damaged after the air cleaner • Air cleaner assembly incorrectly assembled/damaged	Check the intake system and hoses for correct installation/damage. Refer to the relevant workshop manual section.
Lack of boost	• Supercharger drive belt broken/slipping • Supercharger fault • Supercharger air intake fault • Major air leakage (after the supercharger)	Check the supercharger and drive belt. Check the charge air coolers. Refer to the relevant workshop manual section.
Noise	• Supercharger drive belt slipping • Supercharger fault • Major air leakage (after the supercharger)	Check the supercharger and drive belt. Remove the supercharger drive belt and recheck for noise. Turn the supercharger by hand and check for excessive resistance. Check for excessive play at the supercharger pulley. Check the charge air coolers. Refer to the relevant workshop manual section.

DTC Index

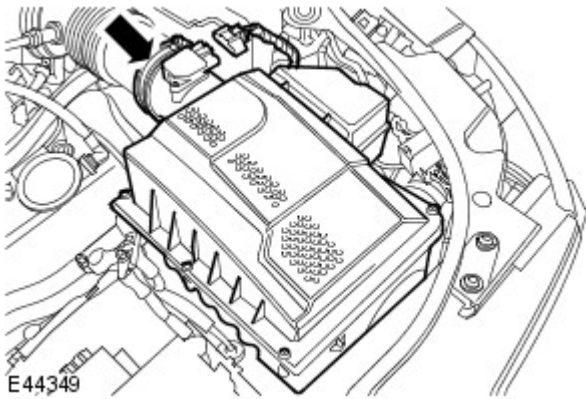
For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00. REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Engine Control Module \(PCM\) 4.0L V6](#) (100-00 General Information, Description and Operation).

Intake Air Distribution and Filtering - V6 4.0L Petrol - 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. Release the air cleaner intake pipe.
 - Loosen the clip.
3. Disconnect the mass air flow (MAF) sensor electrical connector.



4. Remove the air cleaner assembly.

Installation

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

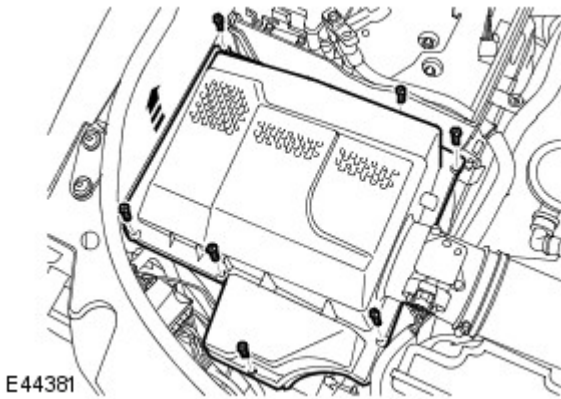
To install, reverse the removal procedure.

Intake Air Distribution and Filtering - V6 4.0L Petrol - Air Cleaner Element

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. Remove the air cleaner housing cover.
 - Remove the 7 screws.
3. Remove the air cleaner element.



Installation

1. Clean the base of the air cleaner.
2. To install, reverse the removal procedure.

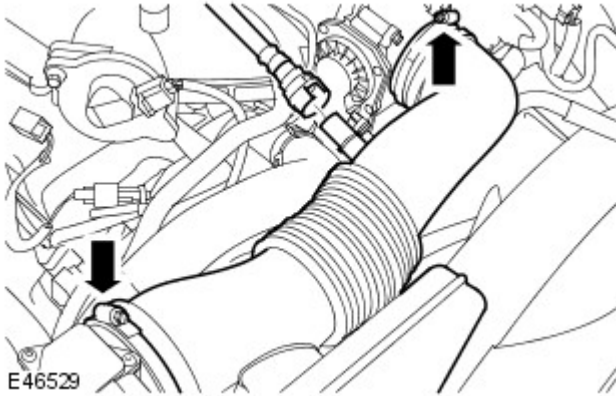
Intake Air Distribution and Filtering - V6 4.0L Petrol - Intake Air Resonator

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. Remove the air cleaner outlet pipe and intake air resonator.

- Release the 2 clips.
- Disconnect the breather hose.



Installation

1. To install, reverse the removal procedure.