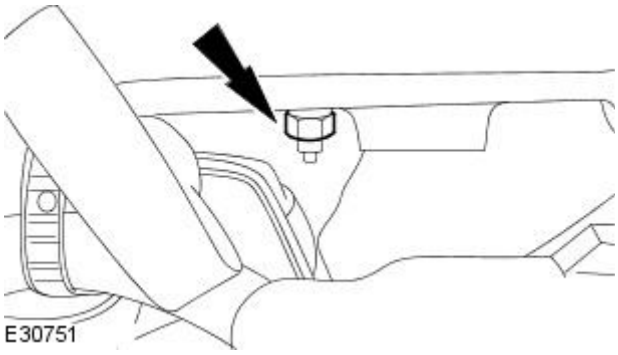
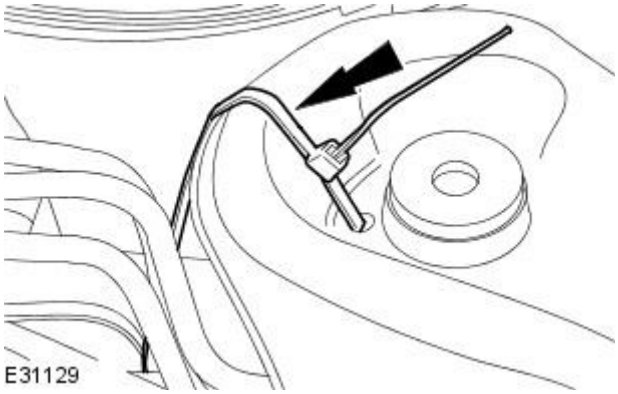


30. NOTE: Left-hand shown, right-hand similar.

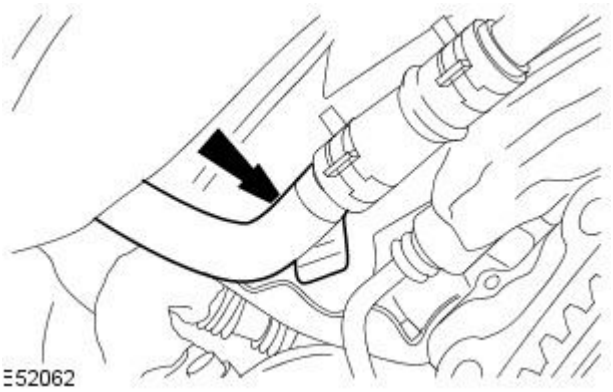
Tighten the exhaust manifold retaining nut.



31. Remove the radiator support.

32. Connect the battery ground cable.
For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

33. Using only four-wheel alignment equipment approved by Jaguar, check and adjust the wheel alignment.
For additional information, refer to: Four-Wheel Alignment (204-00 Suspension System - General Information, General Procedures).



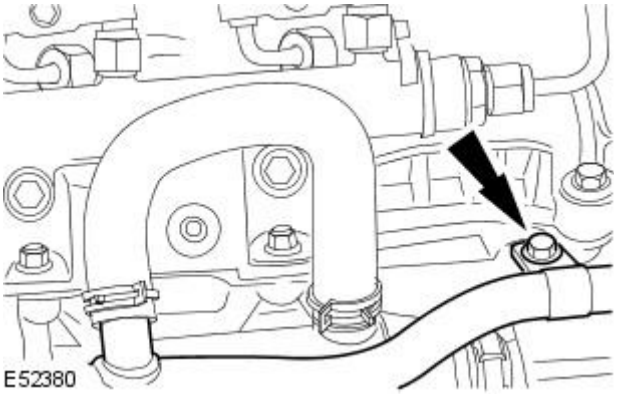
17. Attach the EGR coolant inlet tube.

18. Install the LH catalytic converter.
For additional information, refer to: Catalytic Converter (309-00A Exhaust System - TDV6 2.7L Diesel, Removal and Installation).

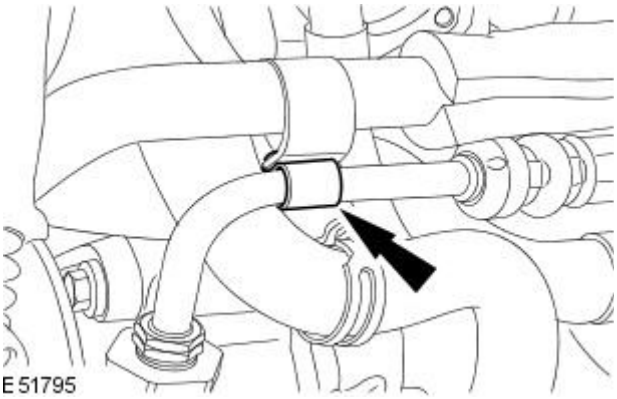
19. Lower the vehicle.

20. Attach the EGR coolant inlet tube.

- Tighten to 10 Nm.



21. Attach the EGR coolant inlet tube.



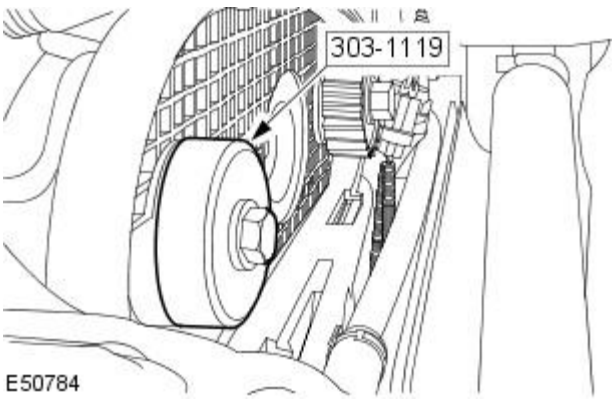
22. CAUTIONS:

A new camshaft front seal is supplied with a transit sleeve that must not be removed until the camshaft front seal is fully installed. Failure to follow this instruction may result in damage to the vehicle.

Do not use any lubricant on the camshaft front seal, transit sleeve or the camshaft. Failure to follow this instruction may result in damage to the vehicle.

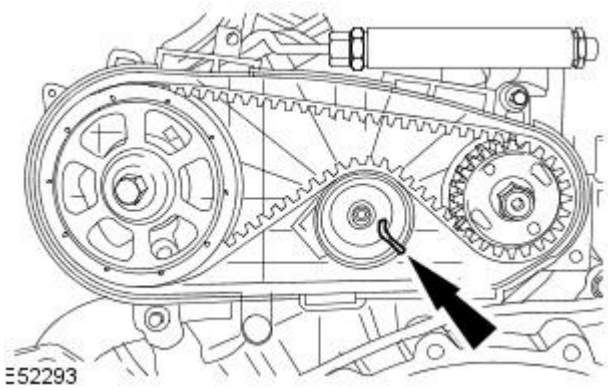
• NOTE: Make sure all components are clean.

Using the special tool, install the new camshaft rear seal.

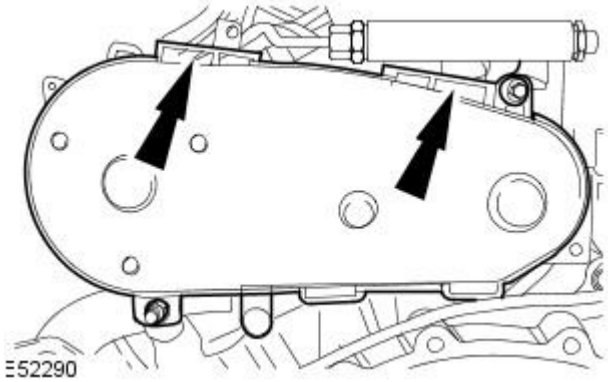


- Remove and discard the transit sleeve.

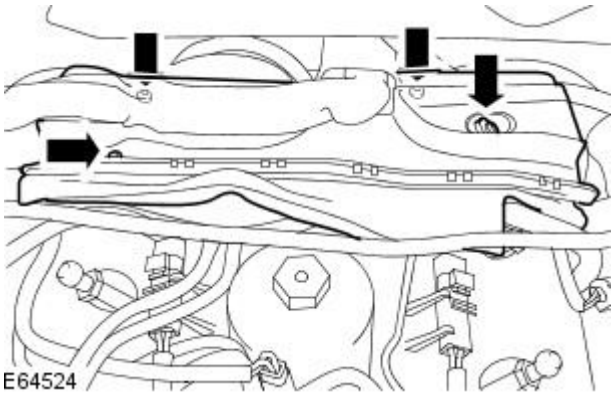
3. Remove and discard the fuel injection pump belt tensioner locking pin.



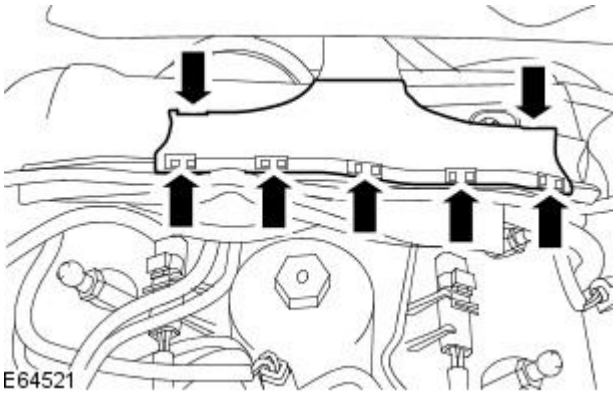
4. Install the fuel injection pump belt cover.



5. Install the engine wiring harness casing.



6. Install the engine wiring harness cover.



7. Install the secondary bulkhead center panel.
For additional information, refer to: Secondary Bulkhead Center Panel (501-02 Front End Body Panels, Removal and Installation).

8. Install the engine cover.
For additional information, refer to: Engine Cover - TDV6 2.7L Diesel (501-05 Interior Trim and Ornamentation, Removal and Installation).

9. Connect the battery ground cable.
For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

• NOTE: On North American Specification (NAS) vehicles, the delay between the cycle when the alarm is activated is 60 seconds.

Lights on Warning

When the ignition is in the off power mode 0 or accessory power mode 4 and the lighting control switch is in the side lamp or headlamp position, a warning chime will sound if the driver's door is opened. This indicates to the driver that the exterior lights have been left switched on.

The chime is generated from the instrument cluster sounder on receipt of a lights on signal, a driver's door open signal and an ignition off power mode 0 or accessory power mode 4 signal via a medium speed CAN bus signal from the CJB.

Headlamp Timer

The RJB controls the headlamp timer function which allows the headlamps to remain on for a period of time after leaving the vehicle. This is a driver convenience feature which illuminates the driveway after leaving the vehicle.

To operate the timer function the lighting control switch must be in one of the three headlamp timer positions when the ignition status is changed from ignition on power mode 6 to the off power mode 0. The timer function will then be initiated and the low beam headlamps will be illuminated for the selected timer period.

• NOTE: If the lighting switch is in the AUTO position, the headlamp timer will not function when the ignition is changed to off power mode 0.

When the lighting control switch is in the autolamp exit delay position, the lighting control switch reference voltage flows through 4 of the resistors. The returned signal voltage is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the RJB that autolamps has been selected.

Depending on the selected exit delay position, the reference voltage to the autolamp exit delay switch is routed through 3, 2 or 1 resistors which is detected by the instrument cluster. The cluster outputs a message on the medium speed CAN bus to the RJB that autolamp exit delay period has been selected at 30, 60 or 120 seconds respectively.

Crash Signal Activation

When a crash signal is transmitted from the RCM (restraints control module), the RJB activates the hazard flashers. The hazard flashers continue to operate until the ignition is in the off power mode 0 or accessory power mode 6. Once this ignition state has occurred, the RCM will cease to transmit the crash signal.

LIGHTING CONTROL SWITCH

The instrument cluster outputs 2 reference voltages to the rotary lighting control switch; one feed being supplied to the light selection function of the switch and the second feed being supplied to the auto headlamp exit delay function. The switch position is determined by instrument cluster by the change in returned signal voltage which is routed through up to 4 resistors in series depending on the selection made.

OFF - When the lighting control switch is in the off position, the reference voltage flows through 1 of the resistors. The returned signal voltage is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB that no lighting selection is made. The reference voltage to the auto headlamp exit delay switch is routed through 4 resistors which is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB that auto headlamp or exit delay has not been selected.

SIDE LAMPS - When the lighting control switch is in the side lamp position, the reference voltage flows through 2 of the resistors. The returned signal voltage is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB to activate the side lamps. The reference voltage to the autolamp exit delay switch is routed through 4 resistors which is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB that auto headlamp or exit delay has not been selected.

HEADLAMPS - When the lighting control switch is in the headlamp position, the reference voltage flows through 3 of the resistors. The returned signal voltage is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB to activate the headlamps. The reference voltage to the auto headlamp exit delay switch is routed through 4 resistors which is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB that auto headlamp or exit delay has not been selected.

AUTOLAMPS - When the lighting control switch is in the auto headlamp position, the reference voltage flows through 4 of the resistors. The returned signal voltage is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB to activate the autolamp function. The reference voltage to the autolamp exit delay switch is routed through 4 resistors which is detected by the instrument cluster which outputs a message on the medium speed CAN bus to the CJB that auto headlamp has been selected.

AUXILIARY LIGHTING SWITCH

Headlamp Leveling Rotary Thumbwheel (Halogen headlamps only)

A power supply is passed to the headlamp leveling thumbwheel from the ignition relay in the EJB. Depending on the position of the thumbwheel, the voltage passes through 1, 2 or 3 resistors connected in series. The voltage through the resistors is passed to the headlamp leveling motor controller in each headlamp. The received voltage is determined as a request for the appropriate level position and the controller powers the headlamp level motors to the applicable position for each headlamp.

Rear Fog Lamp Switch

The instrument cluster supplies a reference voltage and return to the rear fog lamp switch. The fog lamp switch is a non-latching, momentary switch.

When the fog lamp switch is off the reference voltage is passed through a 1Kohm resistor. The voltage through the resistor is returned to the instrument cluster that determines that no request for fog lamp operation has been made.

Published: 11-May-2011

Parking Aid - Parking Aid

Diagnosis and Testing

Principle of Operation

For a detailed description of the parking aid system, refer to the relevant Description and Operation section in the workshop manual. REFER to: (413-13 Parking Aid)

Parking Aid (Description and Operation),
Parking Aid (Description and Operation),
Parking Aid (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 tested and/or the donor vehicle.

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

• NOTE: Particular attention should be paid to the following items where DTCs may not be logged:

- Check for contamination (e.g. dirt, grime, frosting, ice) around the parking aid sensors, if so refer to the parking aid section in the vehicle handbook.
- Check for the correct installation and alignment of the sensors to the bumper.
- Spurious detection of the ground may occur during front system operation on an up-slope, or down slope.

Visual Inspection

Mechanical	Electrical
• Sensor installation, alignment • Sensor contamination	• Fuse(s) • Relay(s) • Wiring Harness • Electrical connector(s) • Front parking aid sensor(s) and holders • Rear parking aid sensor(s) and holders • Audio system • Parking aid switch and LED • Parking aid module

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index

CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

• NOTE: If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

• NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give additional information read by the manufacturer approved diagnostic system).

• NOTE: When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance always take the resistance of the DMM leads into account.

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

• NOTE: Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

• NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

• NOTE: When carrying out repair/diagnosis of the system, on removal of the front or rear bumper inspect the sensor connectors to ensure they were correctly latched and check fly leads for signs of chaffing or trapped wires.

DTC	Description	Possible Cause	Action
B1B3601	Front right outer sensor	• Front right outer sensor signal circuit - short to ground, open circuit • Front right outer	Carry out pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

On NAS vehicles, the ABS warning indicator is also used for parking brake operation. The NAS warning indicator does not have 'ABS' on the icon and will function as described previously for the parking brake operation of the brake warning indicator.

8. Engine Malfunction Indicator Lamp (MIL)

The MIL warning indicator is controlled by the ECM and illuminated by the instrument cluster on receipt of a message on the high speed CAN bus from the ECM. The indicator is illuminated in an amber color for a 3 second indicator check when the ignition is switched on.

If the MIL remains illuminated after the engine is started or illuminates when driving, a fault is present and must be investigated at the earliest opportunity. Illumination of the MIL warning indicator alerts the driver to an OBD (on-board diagnostic) fault which will cause excessive emissions output. This may relate to either an engine management system fault or a transmission.

9. Tire Pressure Monitoring System (TPMS) Warning Indicator

The TPMS warning indicator is illuminated by the instrument cluster on receipt of a medium speed CAN message from the TPMS module. The indicator is illuminated in an amber color for a 3 second indicator check when the ignition is switched on.

If the indicator illuminates and is accompanied by the message 'TYRE PRESSURE SYSTEM FAULT' in the message center, then a TPMS fault has occurred. If the indicator illuminates and accompanied by a different message, then a low tire pressure has been detected, a spare wheel has been fitted or a TPMS sensor has failed.

10. Airbag Warning Indicator

The airbag warning indicator is controlled by the instrument cluster. The indicator is illuminated in an amber color for the 3 second indicator check when the ignition is switched on. The indicator remains illuminated after the 3 second period has expired until the instrument cluster receives a turn off message on the high speed CAN bus from the RCM (restraints control module).

11. Front Fog Lamp Indicator

The green colored front fog lamp indicator is controlled by the CJB and illuminated by the instrument cluster on receipt of a front fog lamp on message on the medium speed CAN bus from the CJB. The indicator is illuminated for as long as the front fog lamps are active. The front fog lamp indicator is not subject to the 3 second indicator check when the ignition is switched on.

12. Dynamic Stability Control (DSC) Indicator

The DSC warning lamp is controlled by the ABS module and illuminated by the instrument cluster in response to messages received on the high speed CAN bus. The indicator is illuminated in an amber color for the 3 second indicator check when the ignition is switched on. The DSC warning indicator, are permanently illuminated in an amber color if the instrument cluster receives a high speed CAN message from the ABS module relating to one of the following faults:

- Traction control fault
- Yaw control fault
- Engine drag torque control fault
- Panic Brake Assist (PBA) fault
- Signal missing relating to either traction control active, yaw control active or DSC switch input.

The above faults will also generate an applicable DSC and ABS warning message in the message center. The DSC warning indicator will flash at 2 Hz for if the traction control or yaw control is active when the DSC system is enabled. If the DSC system is switched off, the warning indicator will be permanently illuminated until the DSC system is subsequently re-activated.

13. Safety Belt Warning Indicator

The safety belt warning indicator operates for both the driver and passenger safety belts. The warning indicator is controlled by the RCM and illuminated by the instrument cluster on receipt of high speed CAN bus messages. The safety belt warning indicator is not subject to the 3 second indicator check when the ignition is switched on.

The operation of the passenger seat buckle switch is as described below with the exception that the instrument cluster must receive a hardwired signal from the belt minder control module to indicate that a passenger is occupying the seat.

The safety belt warning indicator is subject to a timer. The warning indicator is activated when the following conditions exist:

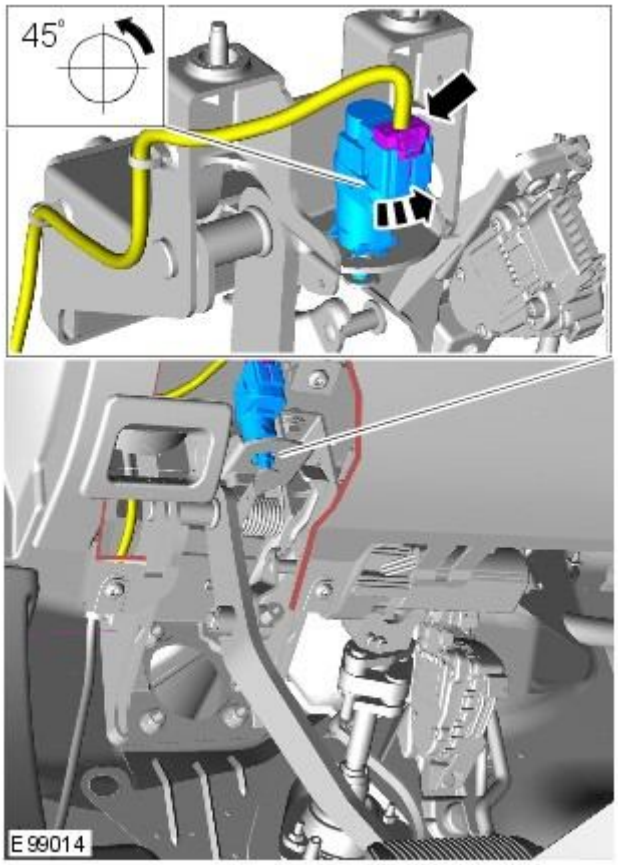
- Ignition is switched on
- One of the front seat belts is unbuckled
- USA market only - 75 seconds has elapsed after ignition on mode is selected
- Vehicle is not in reverse gear
- Vehicle speed is more than 8 km/h (5 mph).

Once the above parameters are met, the instrument cluster flashes the warning indicator at 2 Hz for 10 seconds accompanied by a simultaneous chime. After 10 seconds the chime ceases and the warning indicator is permanently illuminated for 20 seconds. This sequence is repeated every 30 seconds until one of the following events occurs:

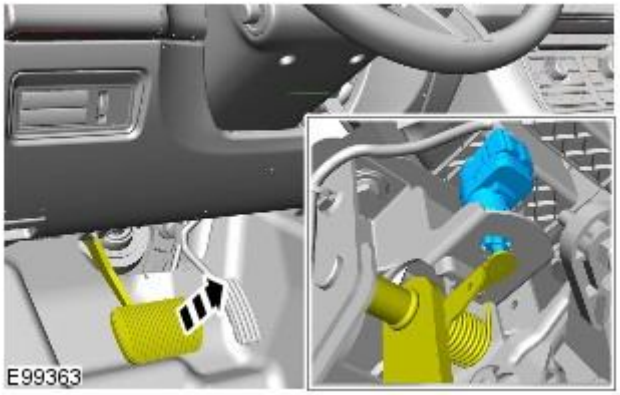
- 300 seconds has elapsed
- The safety belt of the occupied front seats is fastened
- The ignition is switched to off mode
- The vehicle speed decreases to below 5 km/h (3 mph).

• NOTE: On USA market vehicles, the warning indicator in not permanently illuminated.

The safety belt minder function cannot be disabled. The seat belt minder function can be disabled.
Refer to: Safety Belt System (501-20A Safety Belt System, Description and Operation).



5. **5.** CAUTION: Make sure that the brake pedal remains in the rest position during this procedure.



6. **6.** CAUTION: Make sure that the brake pedal remains in the rest position during this procedure.

Installation

1. To install, reverse the removal procedure.

4	Magnet
5	Resistance film

The film resistors are arranged in a linear arc with resistance ranging from 51.2 to 992.11 Ohms. The electrical output signal is proportional to the amount of fuel in the tank and the position of the float arm. The measured resistance is processed by the instrument cluster to implement an anti-slosh function. This monitors the signal and updates the fuel gage pointer position at regular intervals, preventing constant pointer movement caused by fuel movement in the tank due to cornering or braking.

A warning lamp is incorporated in the instrument cluster and illuminates when the fuel level is low.

The fuel level sender signal is converted into a CAN (controller area network) message by the instrument cluster as a direct interpretation of the fuel tank contents in liters. The ECM uses the CAN message to store additional OBD (on-board diagnostic) 'P' Codes for misfire detection when the fuel level is below a predetermined capacity.

JET PUMPS

The fuel system incorporates two jet pumps. The LH (left hand) jet pump is located on the fuel level sensor carrier on the LH (left hand) side of the fuel tank. The RH jet pump is located in the swirl pot below the fuel pump. Both jet pumps operate on a venturi effect created by the fuel at pump output pressure passing through the jet pump. This draws additional fuel from the tank through ports in the jet pump body, delivering additional fuel to the swirl pot. This function also serves to maintain an equal fuel level in the fuel tank compartments.

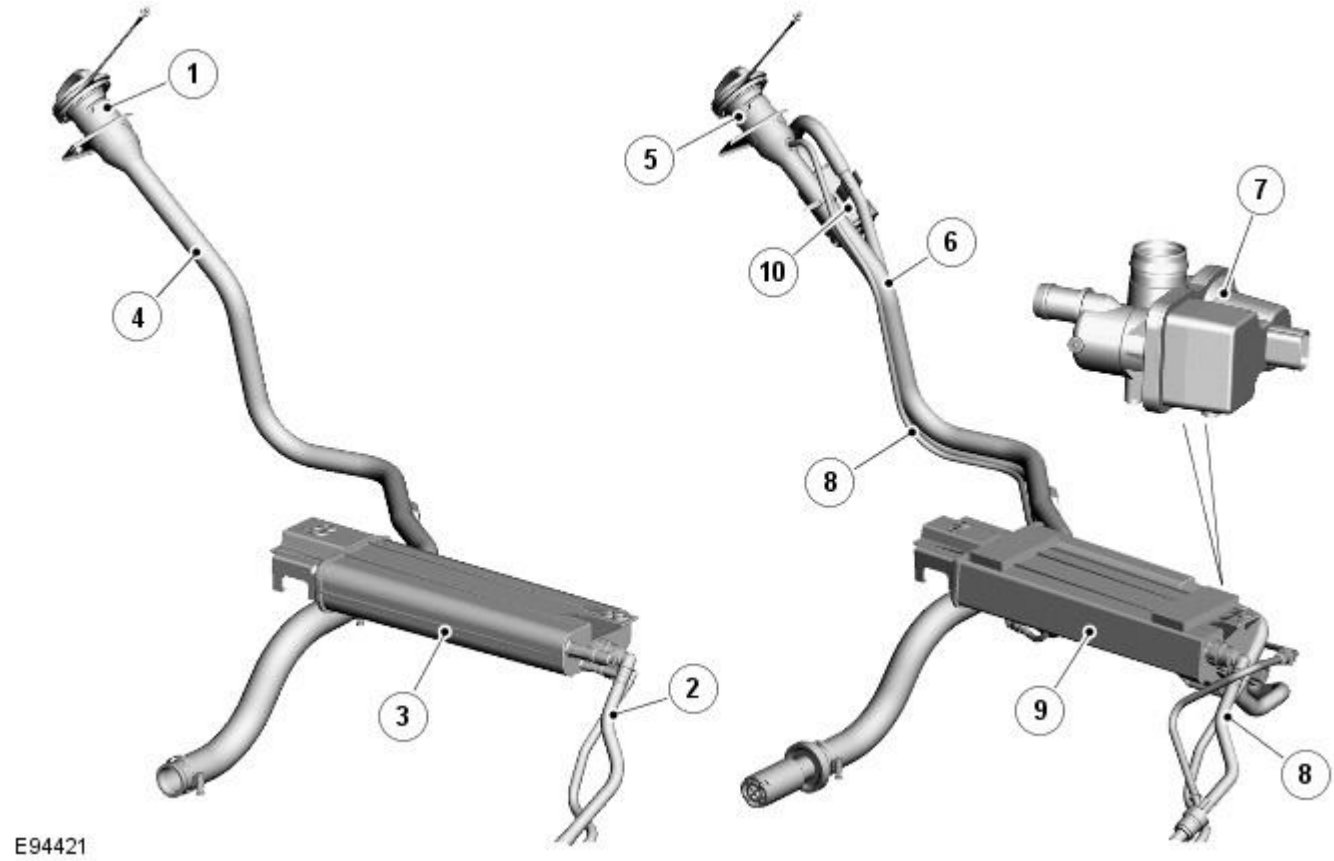
The LH (left hand) jet pump collects fuel from the LH (left hand) side of the tank and transfers it into the swirl pot on the RH (right hand) side of the tank.

The RH (right hand) jet pump collects fuel from below the swirl pot and transfers it to the upper section of the swirl pot. The action of the jet pumps ensures a constant supply of fuel to the swirl pot and fuel pump. Both jet pumps have a jet nozzle of 0.5 mm diameter.

FUEL FILTER

The fuel filter is of a conventional construction being that of a paper element sealed within a steel canister. The fuel filter is located behind the left-hand front fender splash shield.

FUEL FILLER PIPE ASSEMBLY



Item	Description
1	Filler cap and lanyard
2	EVAP pipe work
3	Charcoal canister
4	Fuel filler pipe
5	Filler cap and lanyard (NAS only)
6	Fuel filler pipe (NAS only) only)

Published: 11-May-2011

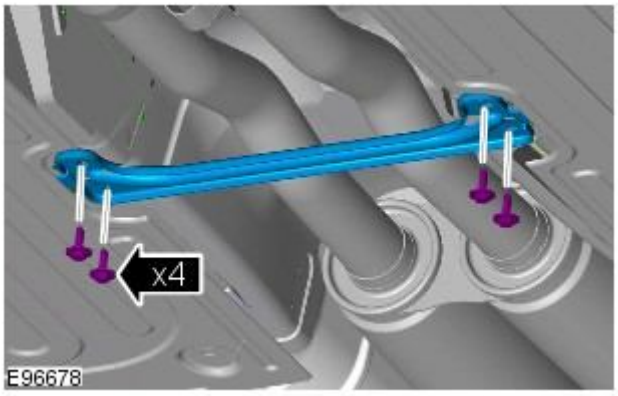
Exhaust System - 4.2L NA V8 - AJV8 / 4.2L SC V8 - AJV8 - Front Muffler

Removal and Installation

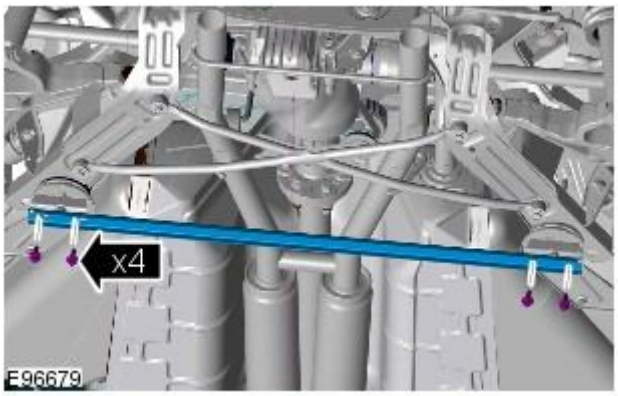
Removal

WARNING: Observe due care when working near a hot exhaust system.

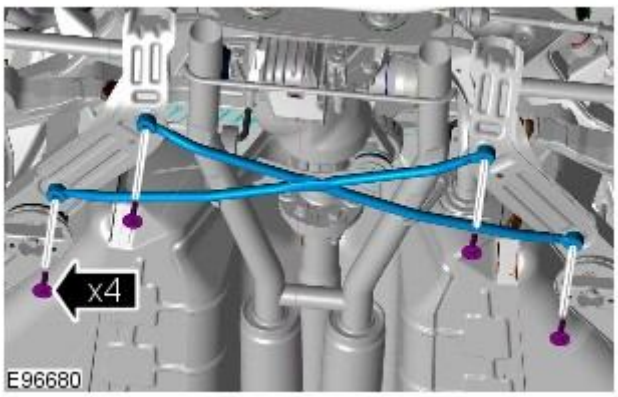
1. Raise the vehicle.
2. Remove the muffler and tailpipe.
   For additional information, refer to: Muffler and Tailpipe (309-00, Removal and Installation).
3. Repeat the above procedure on the opposite side.
4. Remove the engine rear undershield.
5. Remove the support bracket.
   - Remove the 4 bolts.



6. Remove the rear crossmember.



7. Remove the rear subframe crossbrace.



7	Diaphragm spring
8	Output shaft
9	Bearing
10	Dynamic pressure equalisation chamber
11	Piston chamber
12	Lubrication channel

There are 3 drive clutches and 2 brake clutches used in the 6HP26 transmission. Each clutch comprises one or more friction plates dependent on the output controlled. A typical clutch consists of a number of steel outer plates and inner plates with friction material bonded to each face.

On supercharged models, the uprated transmission includes additional clutch plates to enable the transmission to manage the additional power output of the supercharged engine.

The clutch plates are held apart mechanically by a diaphragm spring and hydraulically by dynamic pressure. The pressure is derived from a lubrication channel which supplies fluid to the bearings etc. The fluid is passed via a drilling in the output shaft into the chamber between the baffle plate and the piston. To prevent inadvertent clutch application due to pressure build up produced by centrifugal force, the fluid in the dynamic pressure equalisation chamber overcomes any pressure in the piston chamber and holds the piston off the clutch plate assembly.

When clutch application is required, main pressure from the fluid pump is applied to the piston chamber from the supply port. This main pressure overcomes the low pressure fluid present in the dynamic pressure equalisation chamber. The piston moves, against the pressure applied by the diaphragm spring, and compresses the clutch plate assembly. When the main pressure falls, the diaphragm spring pushes the piston away from the clutch plate assembly, disengaging the clutch.

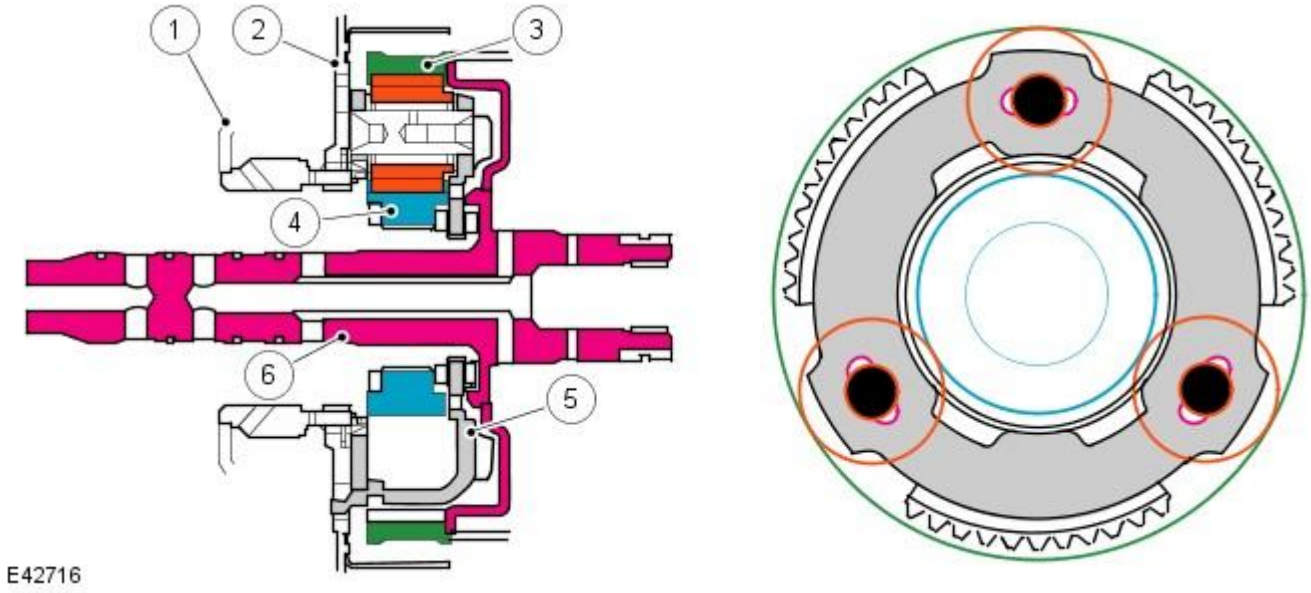
PLANETARY GEAR TRAINS

The planetary gear trains used on the 6HP26 transmission comprise a single web planetary gear train and a double web planetary gear train. These gear trains are known as Lepelletier type gear trains and together produce the 6 forward gears and the 1 reverse gear.

Single Web Planetary Gear Train

The single web planetary gear train comprises:

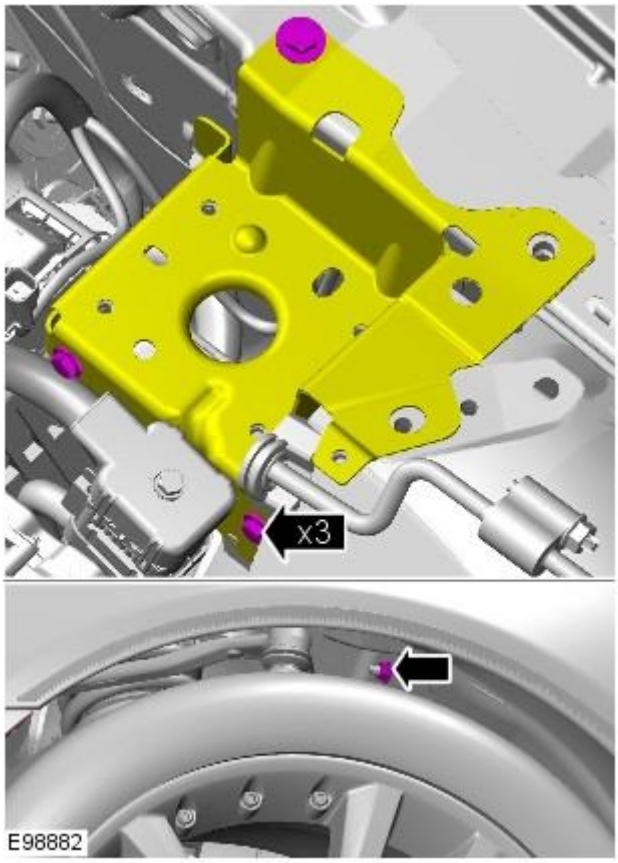
- 1 sunwheel
- 3 planetary gears
- 1 planetary gear carrier (spider)
- 1 ring gear or annulus



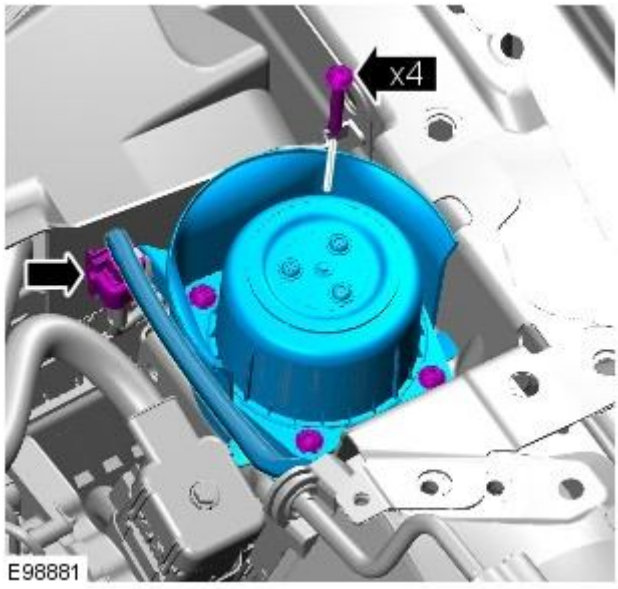
Item	Description
1	Cylinder
2	Baffle plate
3	Ring gear
4	Sun gear
5	Planetary gear spider
6	Torque converter input shaft

Torque converter input shaft

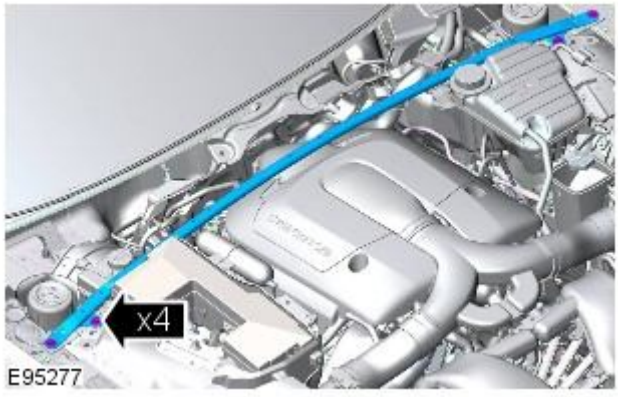
3. Tighten to 25 Nm.



4. Tighten to 8 Nm.



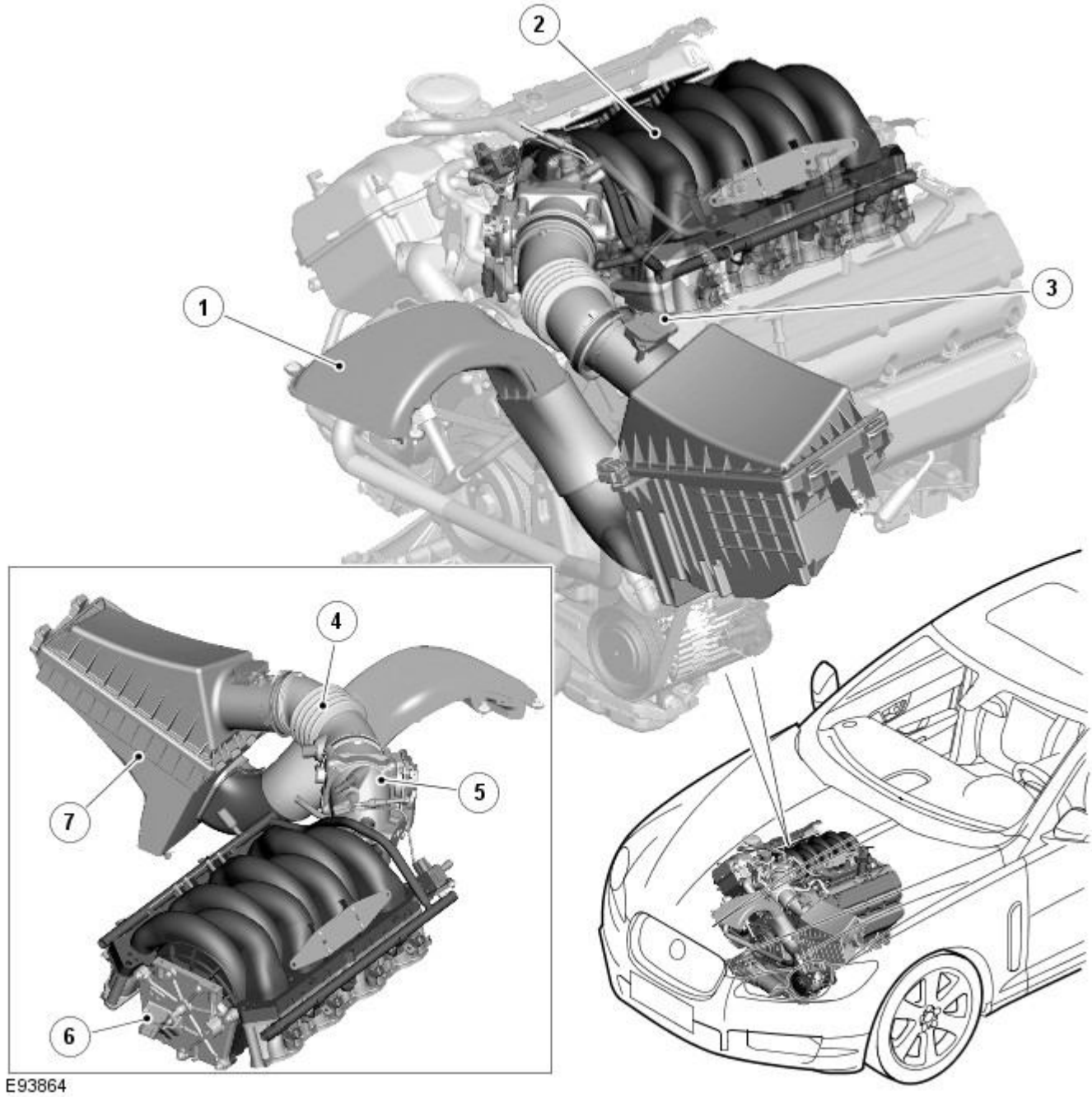
5. Tighten to 25 Nm.



Published: 11-May-2011

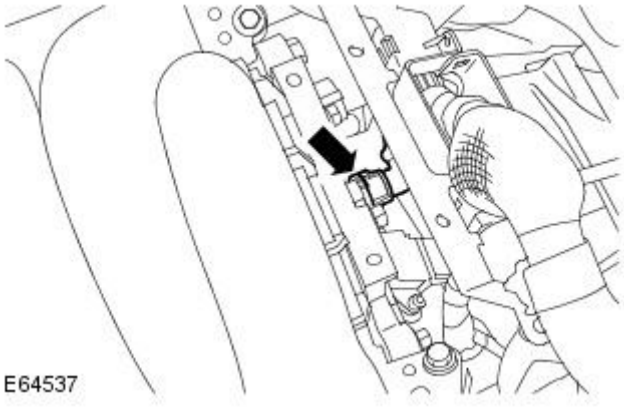
Intake Air Distribution and Filtering - 4.2L NA V8 - AJV8 - Intake Air Distribution and Filtering - Component Location

Description and Operation

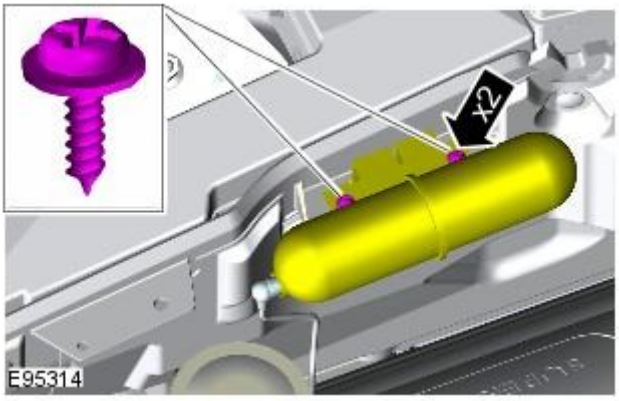


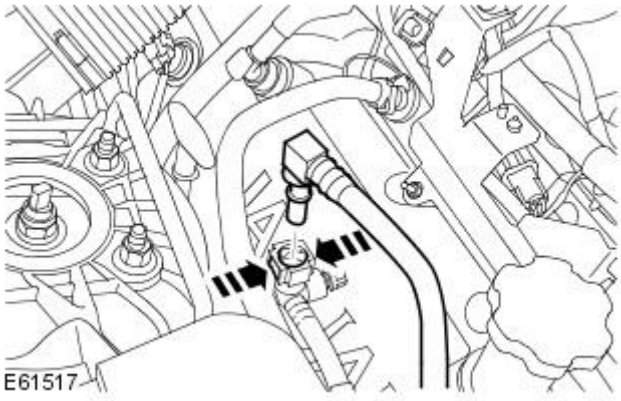
Item	Description
1	Dirty air intake
2	Intake manifold
3	MAF (mass air flow) sensor
4	Clean air pipe
5	Electric throttle
6	MAP (manifold absolute pressure) sensor
7	Air cleaner box

12. Connect the brake booster vacuum hose to the intake manifold.



13. Secure the secondary air injection (AIR) vacuum reservoir.

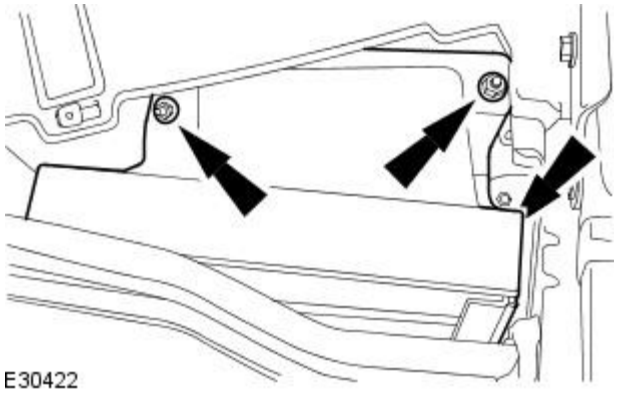




14. CAUTION: Before disconnecting or removing the components, make sure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

Connect the purge valve.

15. Install the ECM cover.

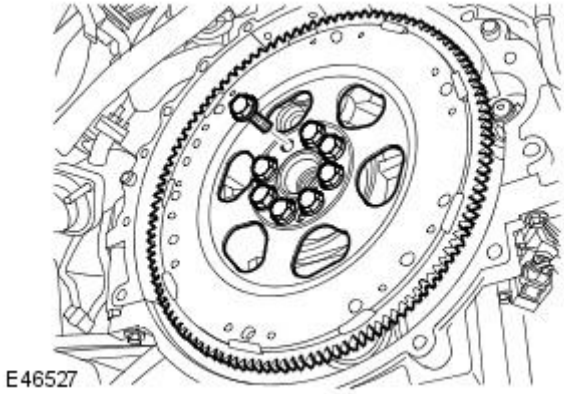


Published: 11-May-2011

Engine - V6 3.0L Petrol - Flexplate

In-vehicle Repair

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.

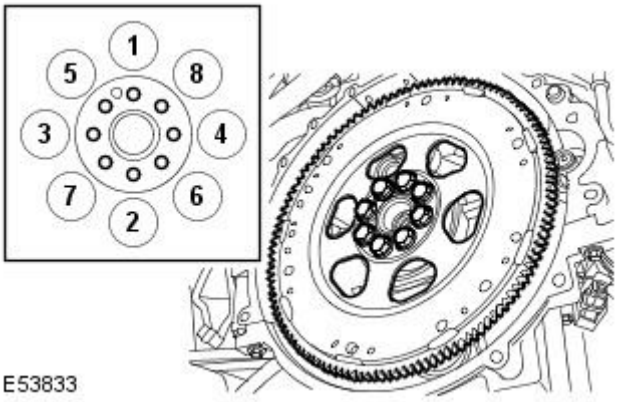
2. Remove the automatic transmission.
   For additional information, refer to: Transmission - V6 3.0L Petrol (307-01 Automatic Transmission/Transaxle - V8 4.2L Petrol/V8 S/C 4.2L Petrol/V6 3.0L Petrol/TDV6 2.7L Diesel, Removal).

3. NOTE: Prevent the flexplate from rotating.

   Remove the flexplate.

   - Remove the 8 bolts.

Installation

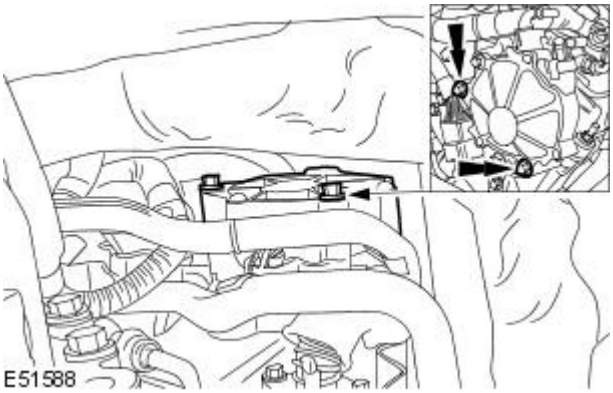


1. CAUTION: Make sure that the locating pin on the crankshaft is aligned with the guide hole in the flexplate.

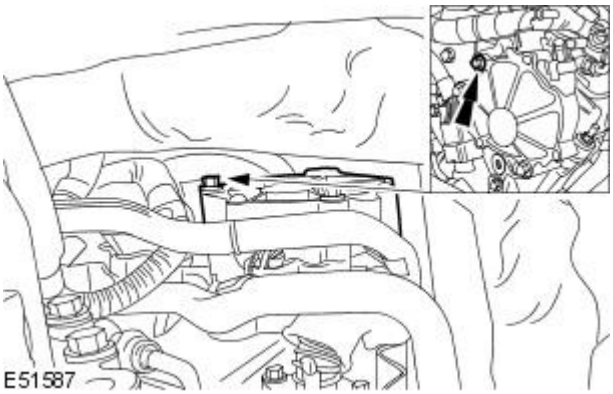
   To install, reverse the removal procedure.

   - Tighten the bolts in the sequence shown in two stages.
   - Tighten to 15 Nm.
   - Tighten to 80 Nm.

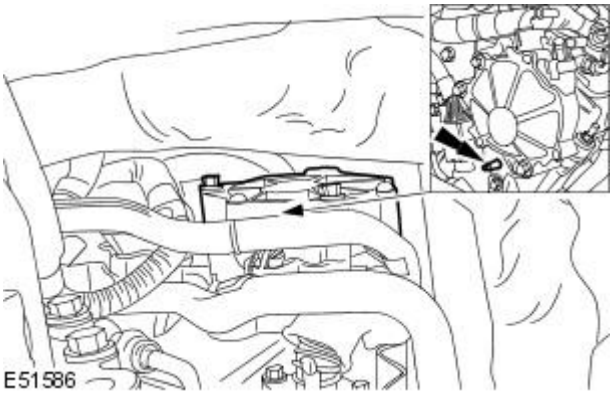
2. Install the automatic transmission.
   For additional information, refer to: Transmission - V6 3.0L Petrol (307-01 Automatic Transmission/Transaxle - V8 4.2L Petrol/V8 S/C 4.2L Petrol/V6 3.0L Petrol/TDV6 2.7L Diesel, Removal).



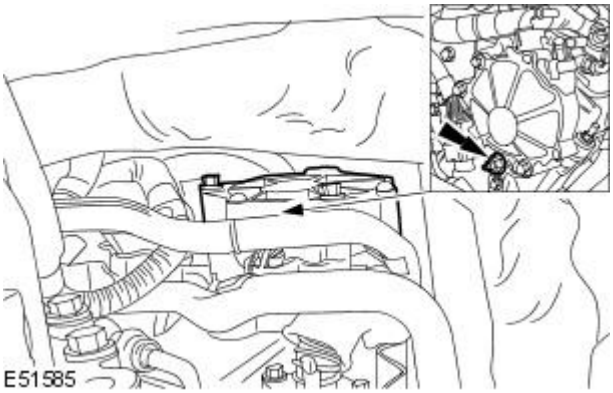
2. Tighten to 23 Nm.



3. Tighten to 10 Nm.



4. Tighten to 13 Nm.



5. Tighten to 13 Nm.