Published: 05-Dec-2011

Exhaust System - ID4 2.2L Diesel -

Lubricants, Fluids, Sealers and Adhesives

	Specifications
*Heated oxygen sensor (H02S) removal	WD40 or suitable alternative
+Heated oxygen sensor (H02S) threads	Apply suitable high temperature anti-seize compound to threads of sensor

* Apply to area around sensor threads prior to removal

+ Apply anti-seize lubricant to threads of sensor prior to installation

Torque Specifications

Description - Vehicles with DPF	Nm	lb-ft
Diesel particulate filter (DPF) to turbo clamp nut	10	7
DPF heatshield	10	7
DPF pressure pipe unions	25	18
DPF temperature sensors	25	18
+DPF heated oxygen sensor (HO2S)	47	35
DPF lower bracket bolts	25	18
Front muffler to tail pipe nuts	25	18
Front muffler to diesel particulate filter nuts	25	18
Chassis crossmember nuts and bolts	80	59

+ Apply anti-seize lubricant to threads of sensor prior to installation

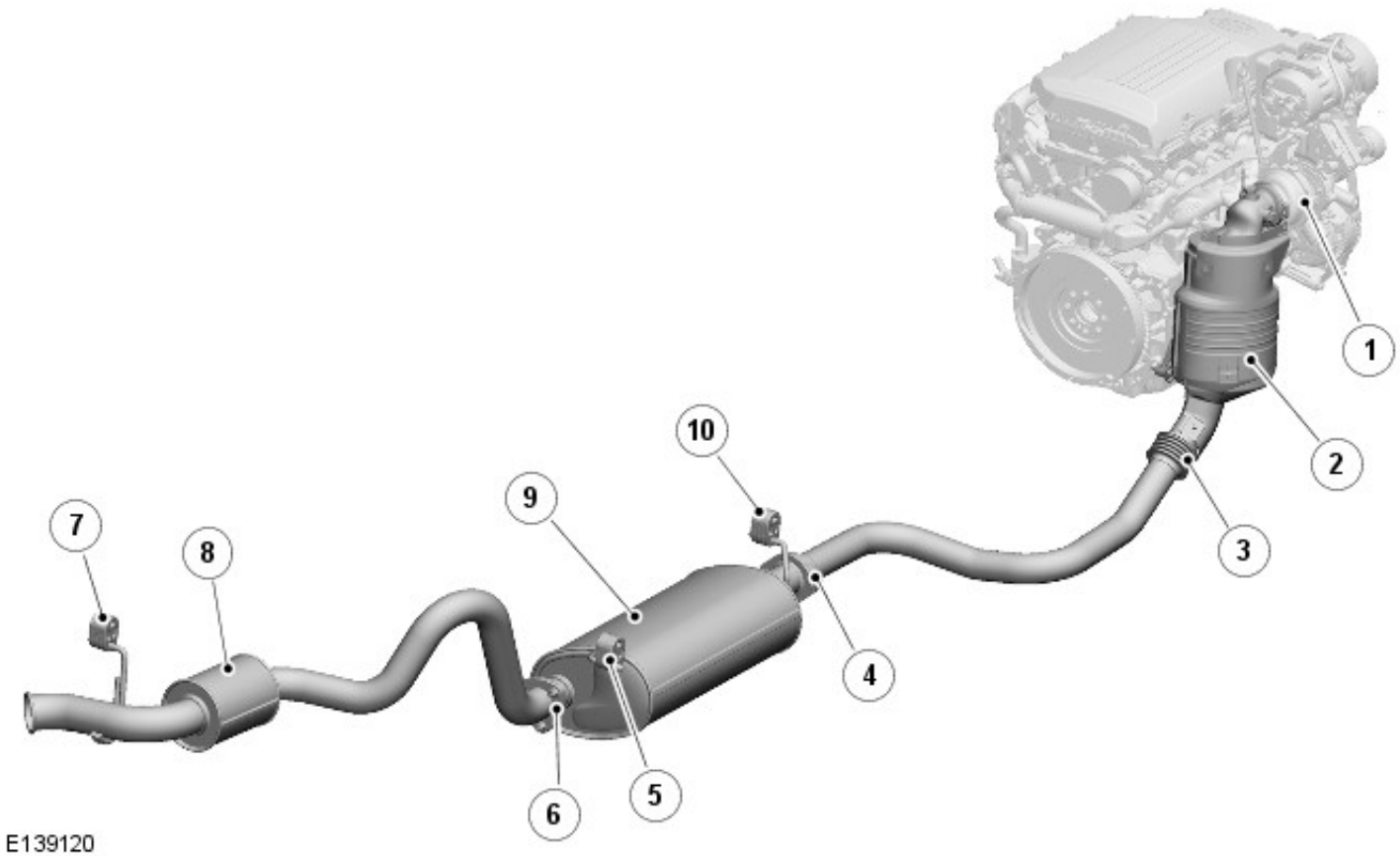
Description - Vehicles without DPF	Nm	lb-ft
Catalytic Converter to turbo clamp nut	10	7
Catalytic Converter heat shield	10	7
Catalytic Converter lower bracket bolts	25	18
Catalytic Converter top bung	48	35
Catalytic Converter side bung	25	18
Front muffler to tail pipe nuts	25	18
Front muffler to diesel particulate filter nuts	25	18
Chassis crossmember nuts and bolts	80	59

Published: 02-Feb-2012

Exhaust System - ID4 2.2L Diesel - Exhaust SystemID4 2.2L Diesel

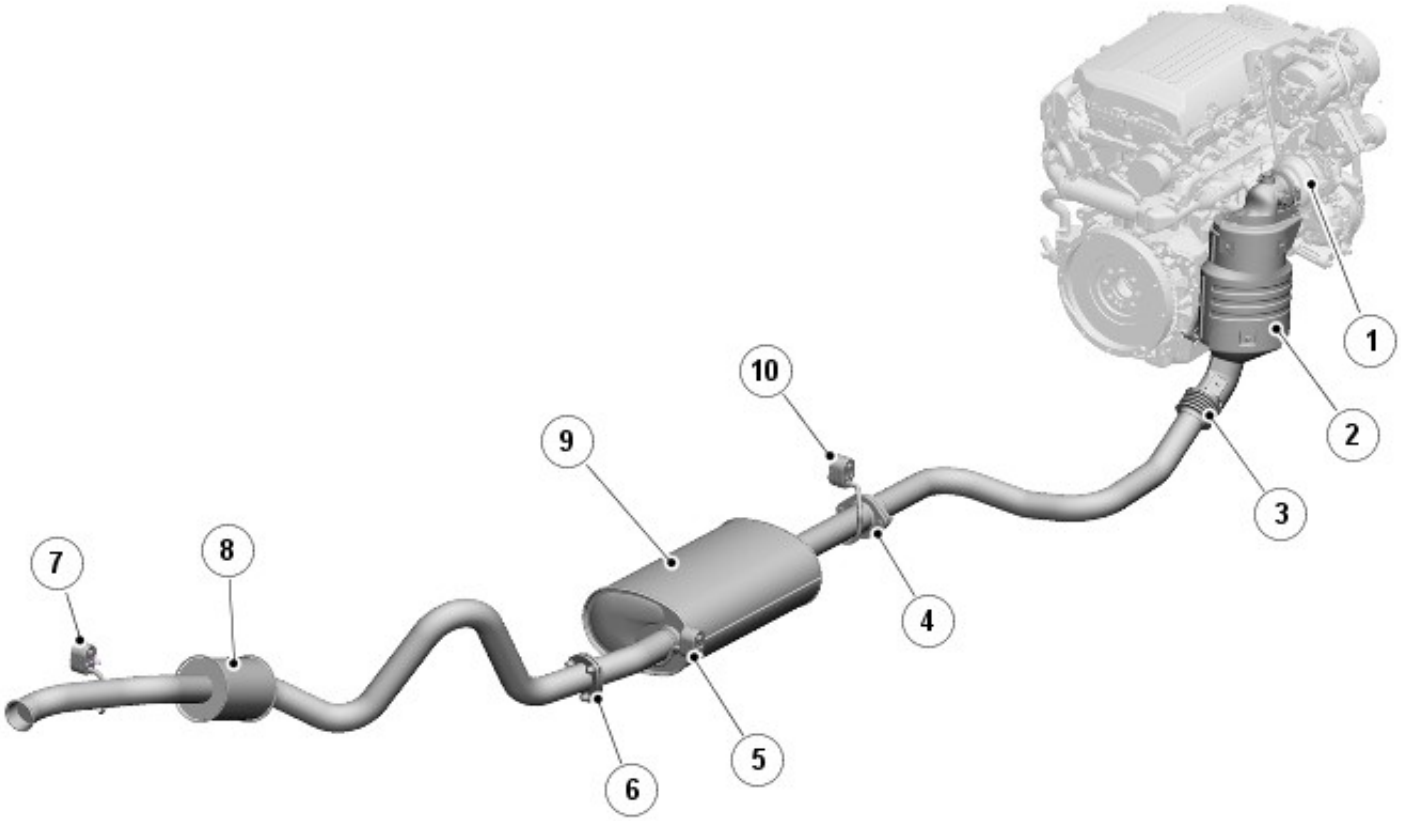
Description and Operation

COMPONENT LOCATION - 90 VARIANT



Item	Part Number	Description
1	-	Turbocharger
2	-	Catalytic convertor/catalytic converter and DPF (diesel particulate filter)
3	-	Flexible joint
4	-	Front joint
5	-	Center hanger bar and mounting rubber
6	-	Rear joint
7	-	Rear hanger bar and mounting rubber
8	-	Rear muffler
9	-	Center muffler
10	-	Front hanger bar and mounting rubber

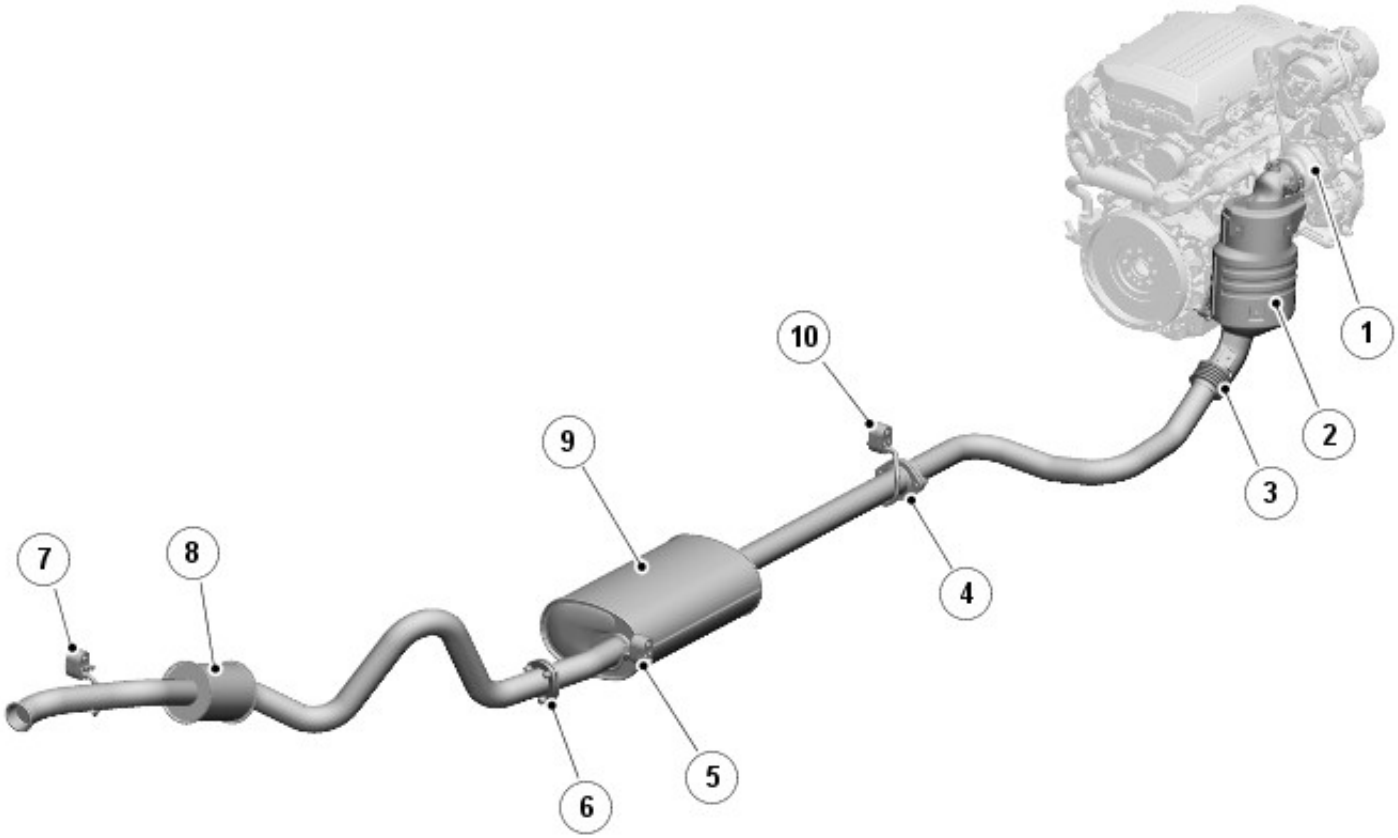
COMPONENT LOCATION - 110 VARIANT



E139121

Item	Part Number	Description
1	-	Turbocharger
2	-	Catalytic convertor/catalytic converter and DPF
3	-	Flexible joint
4	-	Front joint
5	-	Center hanger bar and mounting rubber
6	-	Rear joint
7	-	Rear hanger bar and mounting rubber
8	-	Rear muffler
9	-	Center muffler
10	-	Front hanger bar and mounting rubber

COMPONENT LOCATION - 130 VARIANT



E139122

Item	Part Number	Description
1	-	Turbocharger
2	-	Catalytic convertor/catalytic converter and DPF
3	-	Flexible joint
4	-	Front joint
5	-	Center hanger bar and mounting rubber
6	-	Rear joint
7	-	Rear hanger bar and mounting rubber
8	-	Rear muffler
9	-	Center muffler
10	-	Front hanger bar and mounting rubber

OVERVIEW

The exhaust system is fabricated from stainless steel and is supplied as three separate assemblies;

- A front section incorporating a catalytic converter (vehicles to EU4 emission standards) or a combined catalytic converter and DPF (vehicles to EU5 emission standards).
- A center section incorporating a center muffler.
- A rear section incorporating a rear muffler.

The system is attached to the underside of the body with three mounting rubbers, which are located on mild steel hanger bars that are welded to the system. The mounting rubbers locate on corresponding hangers on the underside of the vehicle body.

FRONT SECTION

The front section is connected to the turbocharger by mating flanges on the turbocharger and the catalytic converter/catalytic converter and DPF, which are secured together using a gasket and a U-clamp. Two M08 bolts attach a bracket on the bottom of the catalytic converter/DPF to the skirt stiffener of the cylinder block.

The body of the catalytic converter/catalytic converter and DPF is covered by an insulation panel. M06 bolts attach upper and lower heat shields to the catalytic converter/catalytic converter and DPF.

On EU5 vehicles, the catalytic converter and DPF incorporates bosses for the attachment of two pressure pipes, and the installation of a HO2S (heated oxygen sensor) and three temperature sensors.

The outlet pipe from the catalytic converter/catalytic converter and DPF incorporates a flexible joint to absorb vibration.

The rear of the outlet pipe locates in the inlet pipe of the center section. A loose flange on the outlet pipe locates on two studs in a flange on the inlet pipe of the center section. Two M10 nuts compress and secure the joint.

CENTER SECTION

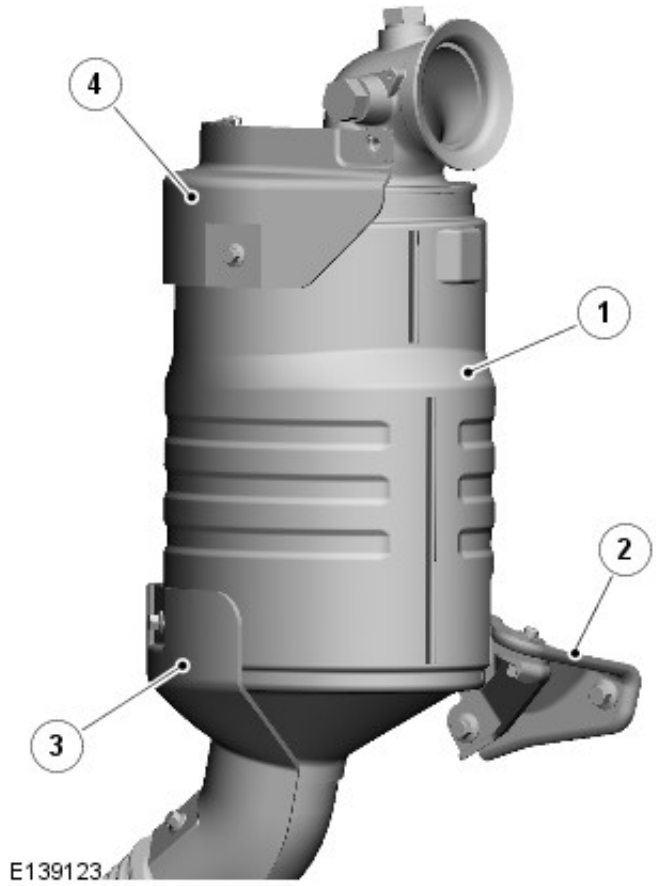
The center muffler is a 3-pass absorption construction with a capacity of 21.33 liters (1302in^3). The muffler contains baffles, perforated tubes and E-glass fiber packs which reduce noise as the exhaust gases pass through the muffler. A hanger bar is welded to the muffler inlet pipe, and provides for the location of a mounting rubber. Another hanger bar is welded to the rear of the muffler on 90 variants and to the outlet pipe on 110 and 130 variants.

The outlet pipe of the center section is secured to the rear section using a flange to flange joint. The flange on the outlet pipe has three studs which locate in the rear section and are secured with M10 nuts.

REAR SECTION

The rear section uses a straight through muffler with a volume of 0.73 liters (44.55in^3). A flange on the inlet pipe connects to the center section. The outlet pipe has a mounting bar welded to the left hand side, which locates in a mounting rubber.

CATALYTIC CONVERTER



Item	Part Number	Description
1	-	Insulation panel
2	-	Support bracket
3	-	Lower heat shield
4	-	Upper heat shield

The catalytic converter, which has a capacity of 1.3 liters, is fitted in the front section of the exhaust system. The catalytic converter assembly is common to vehicles with or without the DPF, however, the catalyst coating specification varies depending on the market.

The catalytic converter reduces the carbon monoxide and hydrocarbons content of the exhaust gases. In the catalytic converter the exhaust gases are passed through honeycombed ceramic elements coated with a special surface treatment called a 'washcoat'.

The washcoat increases the surface area of the ceramic elements by a factor of approximately 7000. On top of the washcoat is a coating containing platinum, which is the active constituent for converting harmful emissions into inert by-products. The platinum adds oxygen to the carbon monoxide and the hydrocarbons in the exhaust gases, to convert them into carbon dioxide and water respectively.

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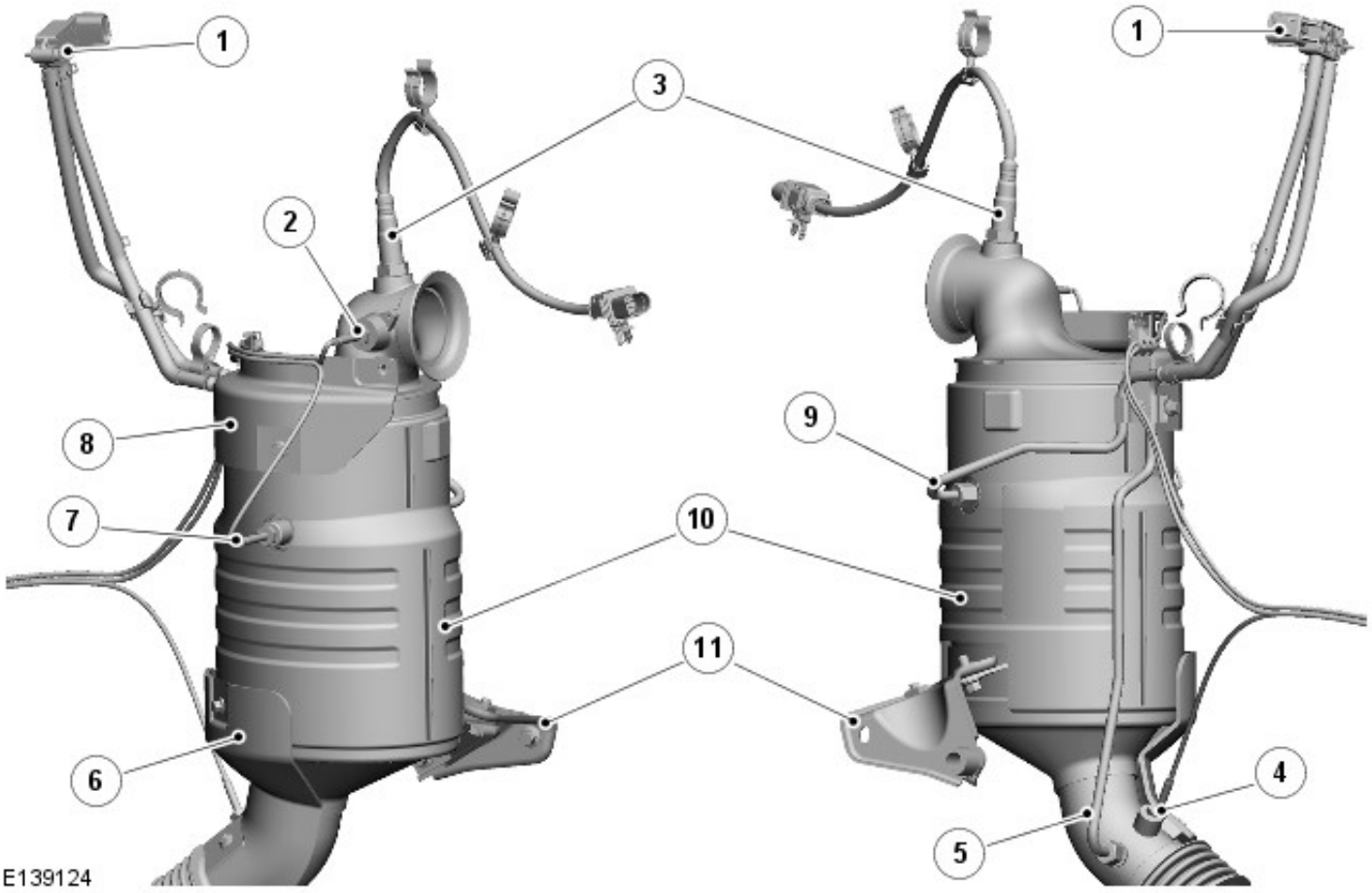
Exhaust System - ID4 2.2L Diesel - Diesel Particulate Filter - Component Location

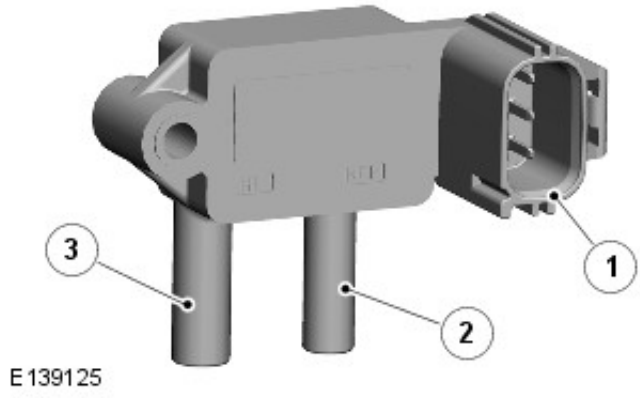
Description and Operation

COMPONENT LOCATION - DIESEL PARTICULATE FILTER



Item	Description
1	Differential pressure sensor
2	Temperature sensor - pre catalytic converter
3	HO2S (heated oxygen sensor)
4	Temperature sensor - post DPF (diesel particulate filter)
5	Low pressure pipe - post DPF
6	Lower heat shield
7	Temperature sensor - post catalytic converter
8	Upper heat shield
9	High pressure pipe - pre DPF
10	Insulation panel
11	Support bracket

COMPONENT LOCATION - DIFFERENTIAL PRESSURE SENSOR



Item Description

1 Electrical connector
2 Low pressure - Post DPF connection
3 High pressure - Pre DPF connection

Published: 02-Feb-2012

Exhaust System - ID4 2.2L Diesel - Diesel Particulate Filter - System Operation and Component Description

Description and Operation

System Operation

DIESEL PARTICULATE FILTER (DPF)

Two processes are used to regenerate the DPF; passive and active.

Passive Regeneration

Passive regeneration requires no special engine management intervention and occurs during normal engine operation. The passive regeneration involves a slow conversion of the particulate matter deposited in the DPF into carbon dioxide. This process is active when the DPF temperature reaches 250°C (482°F) and is a continuous process when the vehicle is being driven at higher engine loads and speeds.

During passive regeneration, only a portion of the particulate matter is converted into carbon dioxide. This is due to the chemical reaction process which is only effective within the normal operating temperature range of 250°C to 500°C (482°F to 932°F).

Above this temperature range the conversion efficiency of the particulates into carbon dioxide increases as the DPF temperature is raised. These temperatures can only be achieved using the active regeneration process.

Active Regeneration

Active regeneration starts when the particulate loading of the DPF reaches a threshold as monitored or determined by the DPF control software. The threshold calculation is based on driving style, distance travelled and back pressure signals from the differential pressure sensor.

Active regeneration generally occurs every 250 miles (400 km) although this is dependant on how the vehicle is driven. For example, if the vehicle is driven at low loads in urban traffic regularly, active regeneration will occur more often. This is due to the rapid build-up of particulates in the DPF than if the vehicle is driven at high speeds when passive regeneration will have occurred.

The DPF software incorporates a mileage trigger which is used as back-up for active regeneration. If active regeneration has not been initiated by a back pressure signal from the differential pressure sensor, regeneration is requested based on distance travelled.

Active regeneration of the DPF is commenced when the temperature of the DPF is increased to the combustion temperature of the particles. The DPF temperature is raised by increasing the exhaust gas temperature. This is achieved by introducing post-injection of fuel after the pilot and main fuel injections have occurred.

This is determined by the DPF software monitoring the signals from the two DPF temperature sensors to establish the temperature of the DPF. Depending on the DPF temperature, the DPF software requests the ECM (engine control module) to perform either one or two post-injections of fuel:

- The first post-injection of fuel retards combustion inside the cylinder which increases the temperature of the exhaust gas.
- The second post-injection of fuel is injected late in the power stroke cycle. The fuel partly combusts in the cylinder, but some unburnt fuel also passes into the exhaust where it creates an exothermic event within the catalytic converter, further increasing the temperature of the DPF.

The active regeneration process takes up to 20 minutes to complete. The first phase increases the DPF temperature to 500°C (932°F). The second phase further increases the DPF temperature to 600°C (1112°F) which is the optimum temperature for particle combustion. This temperature is then maintained for 15-20 minutes to ensure complete incineration of the particles within the DPF. The incineration process converts the carbon particles to carbon dioxide and water.

The active regeneration temperature of the DPF is closely monitored by the DPF software to maintain a target temperature of 600°C (1112°F) at the DPF inlet. The temperature control ensures that the temperatures do not exceed the operational limits of the turbocharger and the catalytic converter. The turbocharger inlet temperature must not exceed 830°C (1526°F) and the catalytic converter brick temperature must not exceed 800°C (1472°F) and the exit temperature must remain below 750°C (1382°F).

During the active regeneration process the following ECM controlled events occur:

- The turbocharger is maintained in the fully open position. This minimizes heat transmission from the exhaust gas to the turbocharger and reduces the rate of exhaust gas flow allowing optimum heating of the DPF. If the driver demands an increase in engine torque, the turbocharger will respond by closing the vanes as necessary.
- The throttle is closed as this assists in increasing the exhaust gas temperature and reduces the rate of exhaust gas flow which has the effect of reducing the time for the DPF to reach the optimum temperature.
- The EGR (exhaust gas recirculation) valve is closed. The use of EGR decreases the exhaust gas temperature and therefore prevents the optimum DPF temperature being achieved.
- The glow plugs are occasionally activated for up to 40 seconds to provide additional heat to assist in raising the DPF temperature.

If, due to vehicle usage and/or driving style, the active regeneration process cannot take place or is unable to regenerate the DPF, the dealer can force regenerate the DPF. This is achieved by either driving the vehicle until the engine is at its normal operating temperature and then driving for a further 20 minutes at speeds of not less than 30 mph (48 km/h) or by connecting an approved Land Rover diagnostic system to the vehicle which will perform an automated static regeneration procedure to clean the DPF.

Fault Diagnosis

For details on regeneration, DTC (diagnostic trouble code)'s, soot levels and component checks, refer to Diagnosis and Testing.
Refer to: Diesel Particulate Filter (309-00B, Diagnosis and Testing).

DPF Control

The DPF requires constant monitoring to ensure that it is operating at its optimum efficiency and does not become blocked. The ECM contains DPF software which controls the monitoring and operation of the DPF system and also monitors other vehicle data to determine regeneration periods and service intervals.

The DPF software can be divided into three separate control software modules; a DPF supervisor module, a DPF fuel management module and a DPF air management module.

These three modules are controlled by a fourth software module known as the DPF co-ordinator module. The co-ordinator module manages the operation of the other modules when an active regeneration is requested. The DPF supervisor module is a sub-system of the DPF co-ordinator module.

DPF Fuel Management Module

The DPF fuel management module controls the following functions:

- Timing and quantity of the four split injections per stroke (pilot, main and two post injections).
- Injection pressure and the transition between the three different calibration levels of injection.

The above functions are dependant on the condition of the catalytic converter and the DPF.

The controlled injection determines the required injection level in addition to measuring the activity of the catalytic converter and the DPF. The fuel management calculates the quantity and timing for the four split injections, for each of the three calibration levels for injection pressure, and also manages the transition between the levels.

The two post injections are required to separate the functionality of increasing in-cylinder gas temperatures and the production of hydrocarbons. The first post injection is used to generate the higher in-cylinder gas temperature while simultaneously retaining the same engine torque output produced during normal (non-regeneration) engine operation. The second post injection is used to generate hydrocarbons by allowing unburnt fuel into the catalytic converter without producing increased engine torque.

DPF Air Management Module

The DPF air management module controls the following functions:

- EGR control
- Turbocharger boost pressure control
- Intake air temperature and pressure control.

During active regeneration, the EGR operation is disabled and the closed-loop activation of the turbocharger boost controller is calculated. The air management module controls the air in the intake manifold to a predetermined level of pressure and temperature. This control is required to achieve the correct in-cylinder conditions for stable and robust combustion of the post injected fuel.

The module controls the intake air temperature by actuating the EGR throttle and by adjustment of the turbocharger boost pressure control.

DPF Co-ordinator Module

The DPF co-ordinator module reacts to a regeneration request from the supervisor module by initiating and co-ordinating the following DPF regeneration requests:

- EGR cut-off
- Turbocharger boost pressure control
- Engine load increase
- Control of air pressure and temperature in the intake manifold
- Fuel injection control.

When the supervisor module issues a regeneration request, the co-ordinator module requests EGR cut-off and a regeneration specific turbocharger boost pressure control. It then waits for a feedback signal from the EGR system confirming that the EGR valve is closed.

When the EGR valve is closed, the co-ordinator module initiates requests to increase engine load by controlling the intake air temperature and pressure.

Once confirmation is received that intake conditions are controlled or a calibration time has expired, the co-ordinator module then changes to a state awaiting an accelerator pedal release manoeuvre from the driver. If this occurs or a

calibration time has expired, the co-ordinator module generates a request to control fuel injections to increase exhaust gas temperature.

DIFFERENTIAL PRESSURE SENSOR

As the amount of particulates trapped by the DPF increases, the pressure at the inlet side of the DPF increases in comparison to the DPF outlet. The DPF software uses this comparison, in conduction with other data, to calculate the accumulated amount of trapped particulates.

By measuring the pressure difference between the DPF inlet and outlet and the DPF temperature, the DPF software can determine if the DPF is becoming blocked and requires regeneration.

Component Description

DIESEL PARTICULATE FILTER (DPF)

The DPF system reduces diesel particulate emissions to negligible levels to meet current European stage 5 emission standards.

The particulate emissions are the black fumes emitted from the diesel engine under certain load conditions. The emissions are a complex mixture of solid and liquid components with the majority of the particulates being carbon microspheres on which hydrocarbons from the engine's fuel and lubricant condense.

The DPF system comprises the following components:

- Diesel Particulate Filter (DPF)
- DPF control software incorporated in the ECM
- Differential pressure sensor.

The DPF is located in the exhaust system, downstream of the catalytic converter. Its function is to trap particulate matter in the exhaust gases leaving the engine. A major feature of the DPF is its ability for regeneration. Regeneration is the burning of particulates trapped by the filter to prevent obstruction to the free flow of exhaust gasses. The regeneration process takes place at calculated intervals and is not noticeable by the driver of the vehicle.

Regeneration is most important, since an overfilled filter can damage the engine through excessive exhaust back pressure and can itself be damaged or destroyed. The material trapped in the filter is in the most part carbon particles with some absorbed hydrocarbons.

The DPF uses a filter technology based on a filter with a catalytic coating. The DPF is made from silicon carbide housed in a steel container and has excellent thermal shock resistance and thermal conductivity properties. The DPF is designed for the engine's operating requirements to maintain the optimum back pressure requirements.

The porous surface of the filter consists of thousands of small parallel channels positioned in the longitudinal direction of the exhaust system. Adjacent channels in the filter are alternately plugged at the end. This design forces the exhaust gasses to flow through the porous filter walls, which act as the filter medium. Particulate matter which are too big to pass through the porous surface are collected and stored in the channels.

The collected particulate matter, if not removed, can create an obstruction to exhaust gas flow. The particles are removed by a regeneration process which incinerates the particles.

The regeneration process uses NO^2 to remove the particles from the DPF. The NO^2 is generated by the catalytic converter upstream of the DPF. The catalytic converter produces temperatures in excess of 250°C (482°F) at which point the regeneration process is started.

DPF regeneration is controlled by the temperature of the exhaust gasses and the DPF. The DPF includes a wash coat to the filter surface which comprises platinum and other active components and is similar to the catalytic converter. At certain exhaust gas and DPF temperatures the wash coat promotes combustion and incineration of the particles in addition to oxidizing carbon monoxide and hydrocarbon emissions.

The exhaust gas and DPF temperatures are controlled by the DPF software located in the ECM. The DPF software monitors the load status of the DPF based on driving style, distance travelled and signals from the differential pressure sensor and temperature sensors. When the particulate loading of the DPF reaches predetermined levels, the DPF is actively regenerated by adjusting, in conjunction with the ECM, various engine control functions such as:

- fuel injection
- intake air throttle
- glow plug activation
- exhaust gas recirculation
- turbocharger boost pressure control.

The regeneration process is possible because of the flexibility of the common-rail fuel injection engine which provides precise control of fuel flow, fuel pressure and injection timing which are essential requirements to promote the efficient regeneration process.

Diesel Particulate Filter Temperature Sensors

Two temperature sensors are used in the DPF system. One is located in the turbocharger outlet elbow, adjacent to the HO2S and the second sensor is located in the DPF inlet.

The sensors measure the temperature of exhaust gas exiting the turbocharger and before it passes through the DPF and provides the information needed to calculate the DPF temperature.

The information is used, in conjunction with other data, to estimate the amount of accumulated particulates and to control the DPF temperature.

Instrument Cluster Indications

For drivers who make regular short journeys at low speeds, it may not be possible to efficiently regenerate the DPF. In this case, the DPF software will detect a blockage of the DPF from signals from the differential pressure sensor and will alert the driver as follows:

The driver will be alerted to this condition by a message 'DPF FULL. See Manual'. As detailed in the Owners Handbook, the driver should drive the vehicle until the engine is at its normal operating temperature and then drive for a further 20 minutes at speeds of not less than 30 mph (48 km/h). Successful regeneration of the DPF is indicated to the driver by the 'DPF FULL' message no longer being displayed. If the DPF software detects that the DPF is still blocked, the message will continue to be displayed or an additional message 'DPF FULL VISIT DEALER' will be displayed. The driver should take the vehicle to an authorized dealer to have the DPF force regenerated using an approved diagnostic system.

Diesel Particulate Filter Side Effects

The following section details some side effects caused by the active regeneration process.

Engine Oil Dilution

Engine oil dilution can occur due to small amounts of fuel entering the engine crankcase during the post-injection phases. This has made it necessary to introduce a calculation based on driving style to reduce oil service intervals if necessary. The driver is alerted to the oil service by a message in the instrument cluster.

The DPF software monitors the driving style and the frequency of the active regeneration and duration. Using this information a calculation can be made on the engine oil dilution. When the DPF software calculates the engine oil dilution has reached a predetermined threshold (fuel being 7% of engine oil volume) a service message is displayed in the instrument cluster.

Depending on driving style, some vehicles may require an oil service before the designated interval. If a service message is displayed, the vehicle will be required have a full service and the service interval counter will be reset.

Fuel consumption

During the active regeneration process of the DPF, there will be an increase in fuel consumption. When active regeneration is operating, there will be a 100% increase in fuel consumption.

However, because active regeneration occurs infrequently, the overall effect on fuel consumption is approximately 2%. The additional fuel used during the active regeneration process is accounted for in the instantaneous and average fuel consumption displays in the instrument cluster.

DIFFERENTIAL PRESSURE SENSOR

The differential pressure sensor is used by the DPF software to monitor the condition of the DPF. Two pipe connections on the sensor are connected by pipes to the inlet and outlet ends of the DPF. The pipes allow the sensor to measure the inlet and outlet pressures of the DPF.

Published: 08-Dec-2011

Exhaust System - ID4 2.2L Diesel - Exhaust System

Diagnosis and Testing

Principle of Operation

For a detailed description of the exhaust system, refer to the relevant Description and Operation section of the workshop manual.
REFER to: Exhaust System (309-00A, 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. Verify the customer concern
2. Visually inspect for obvious signs of mechanical or electrical damage

Visual Inspection

Mechanical	Electrical
• Leaks • Metal fatigue • Pipes • Catalytic converter • Muffler(s) • Joints • Mountings • Clearance around components	• Fuses • Wiring harness • Electrical connector(s) • Sensor(s) • Engine Control Module (ECM)

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. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively check for DTCs and refer to the DTC Index

Symptom Chart

Symptom	Possible Causes	Action
Noisy or leaking exhaust	• Exhaust system/components	Install new components as necessary. Refer to the relevant section of the workshop manual
Lack of power	• Air intake system fault • Restricted exhaust system • Low fuel pressure • Exhaust Gas Recirculation (EGR) valve(s) fault • Turbocharger fault	Check the air intake system. Check for a blocked catalytic converter or muffler, install new components as necessary. Check the fuel pressure. For EGR and turbocharger tests, refer to the relevant section of the workshop manual

DTC Index

For a complete list of all diagnostic trouble codes that could be logged on this vehicle, please refer to Section 100-00.
REFER to: Diagnostic Trouble Code (DTC) Index - TDV6 3.0L Diesel, DTC: Engine Control Module (PCM) (100-00 General Information, Description and Operation).

Published: 29-Sep-2011

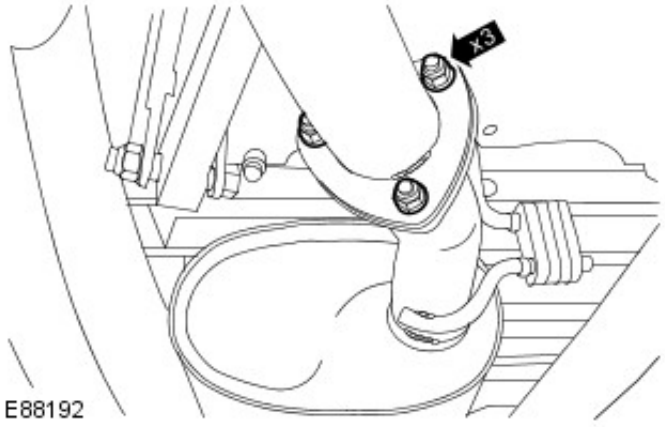
Exhaust System - ID4 2.2L Diesel - Muffler and Tailpipe

Removal and Installation

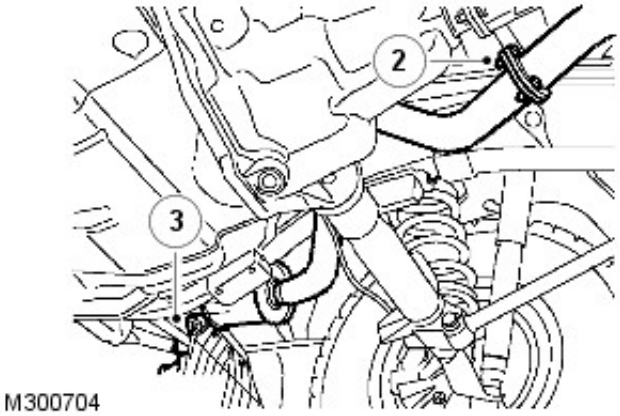
Removal

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.



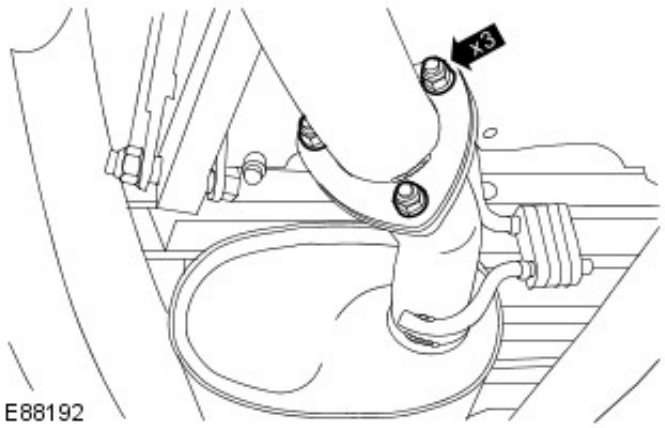
2. Release the front muffler from the tail pipe.
   1. Remove and discard the 3 nuts.
   2. Remove and discard the gasket.



3. Remove the rear muffler and tail pipe.
   1. Release the rear muffler from the rubber mounting.

Installation

1. Install the rear muffler and tail pipe.
   1. Secure the rear muffler to the rubber mounting.



2. NOTE: Install a new gasket.

   NOTE: Install new nuts.

   Secure the front muffler to the tail pipe.
   1. Tighten to 25 Nm (18 lb.ft).

Published: 13-Jan-2012

Exhaust System - ID4 2.2L Diesel - Catalytic Converter

Removal and Installation

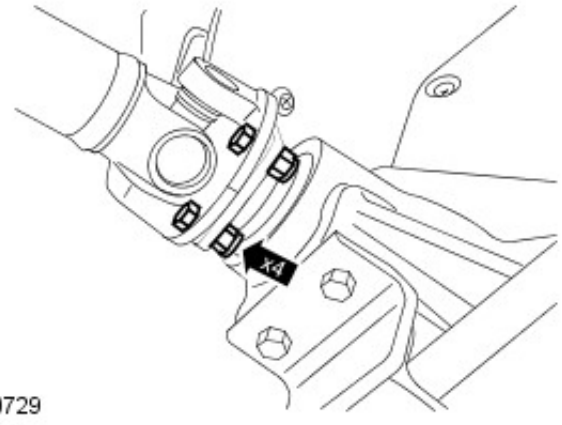
Removal

1. For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

2. 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.

3.



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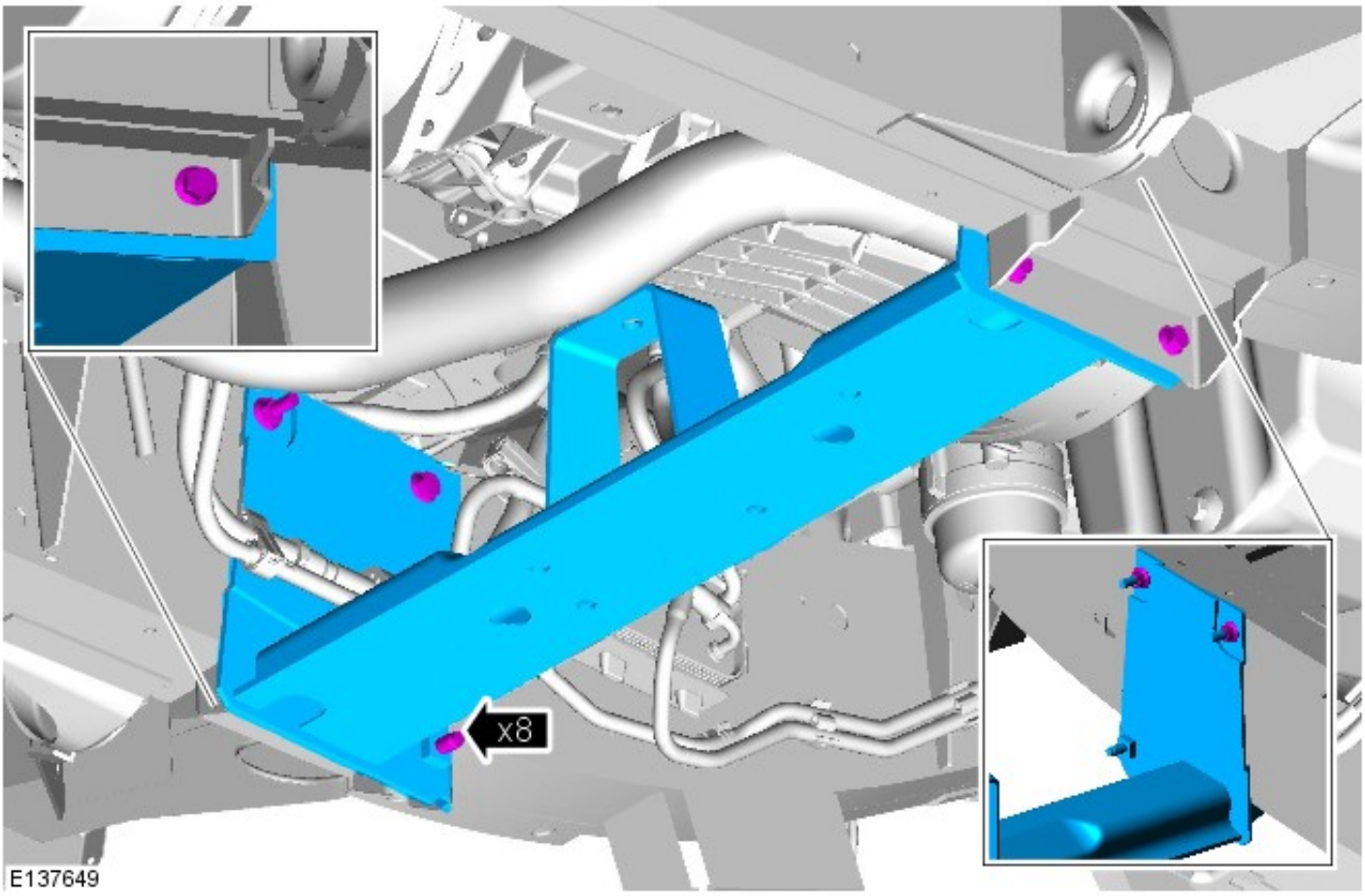

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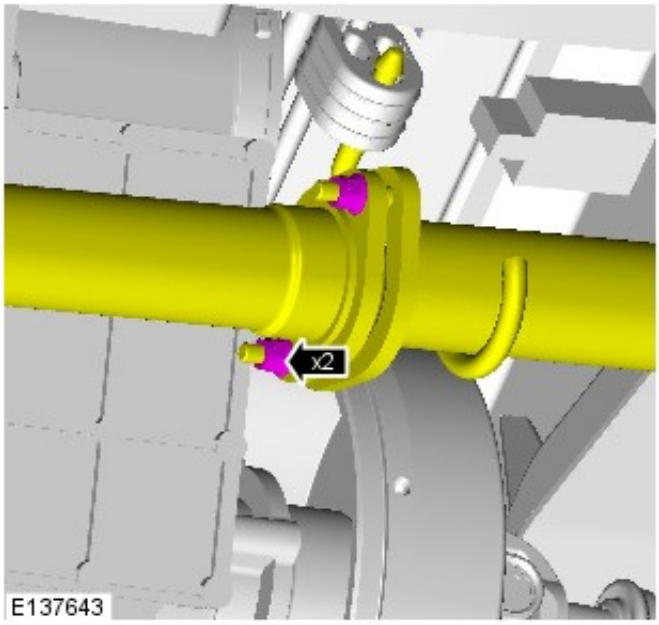

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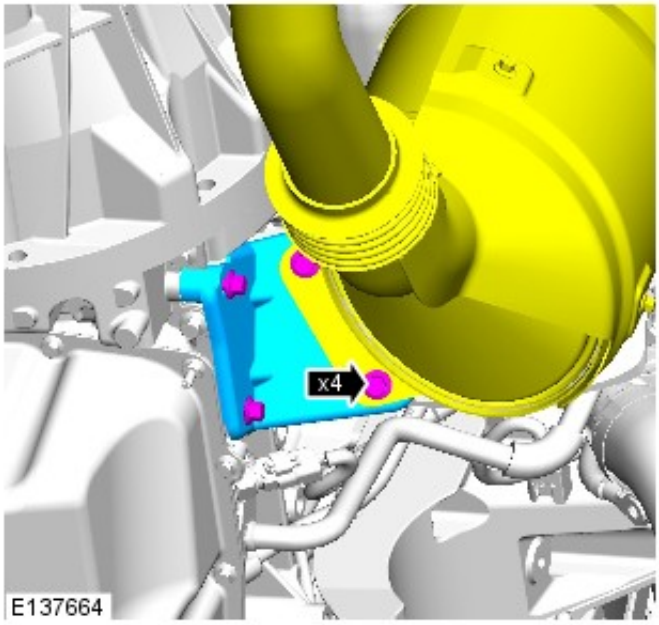
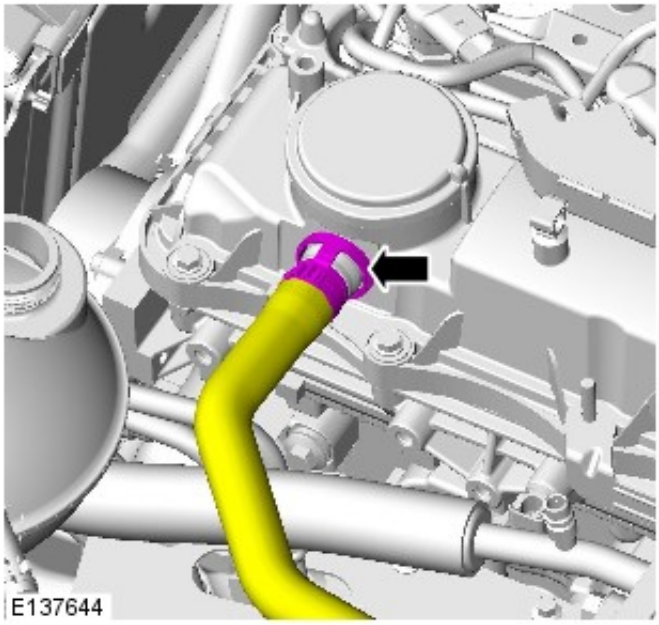


7. Lower the vehicle.

8. For additional information, refer to: Engine Cover (501-05 Interior Trim and Ornamentation, Removal and Installation).

9.



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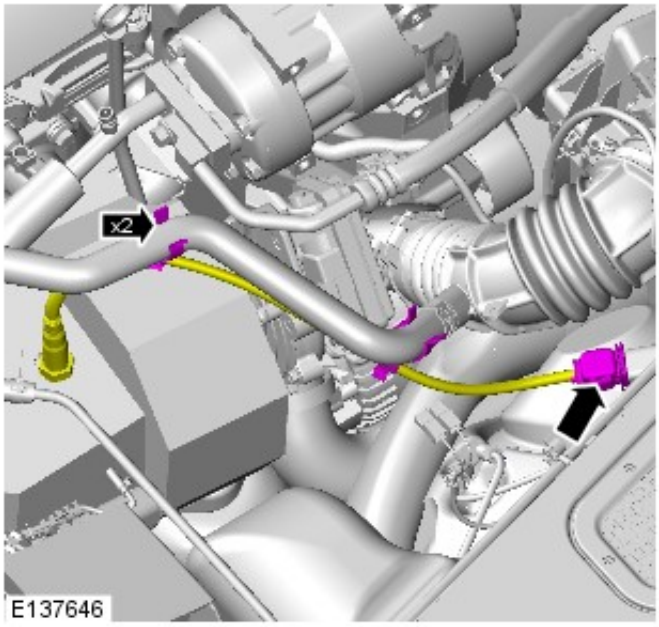

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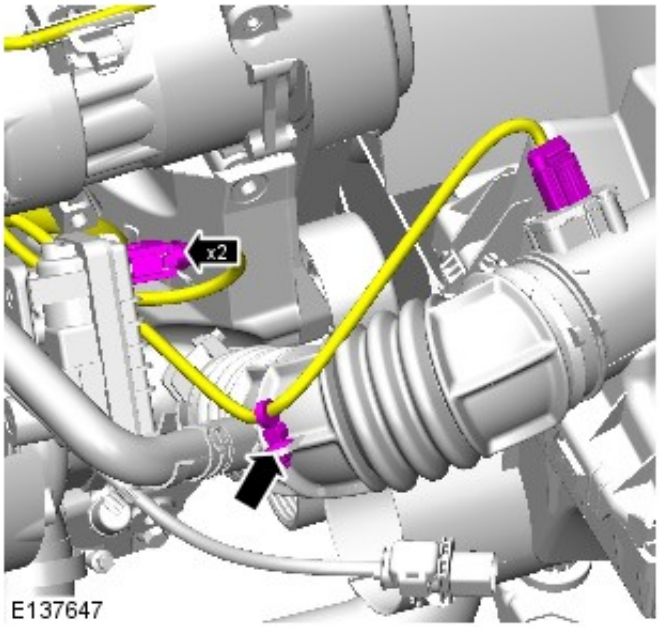

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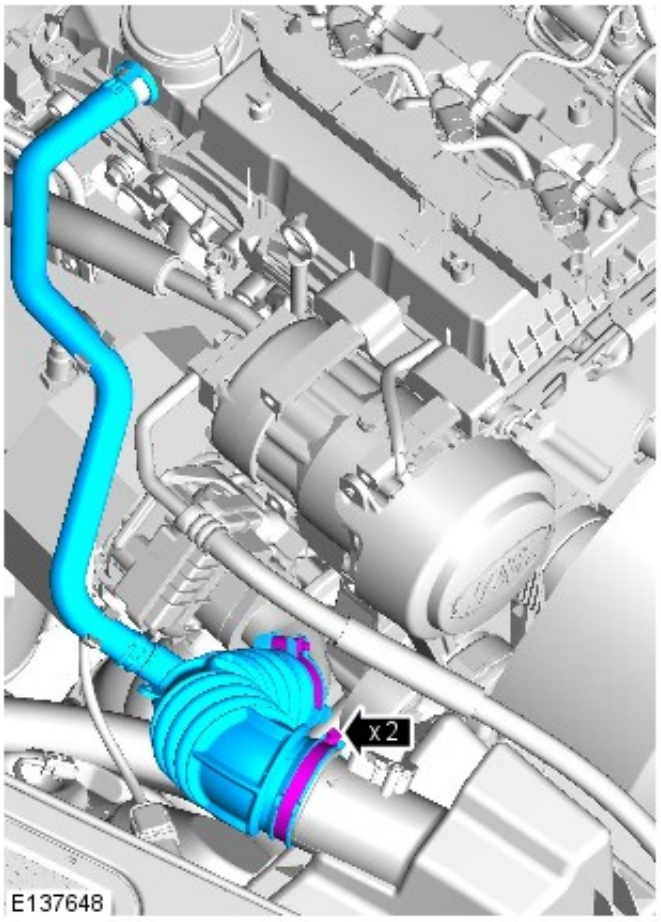

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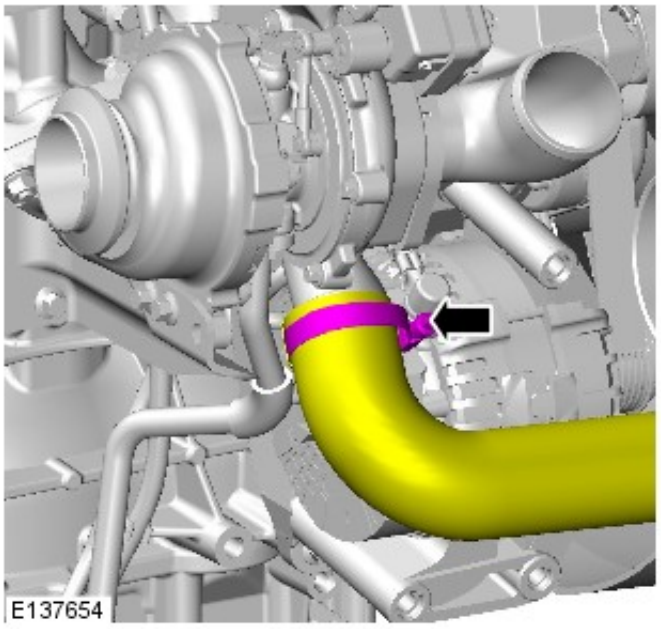

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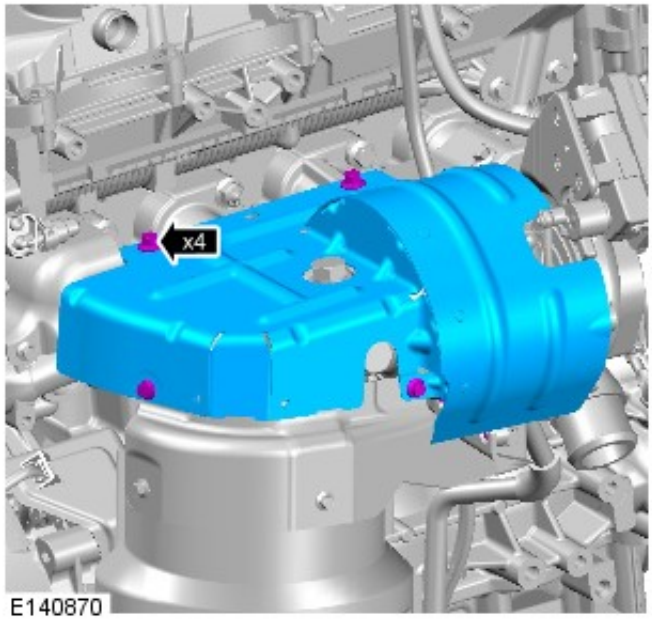

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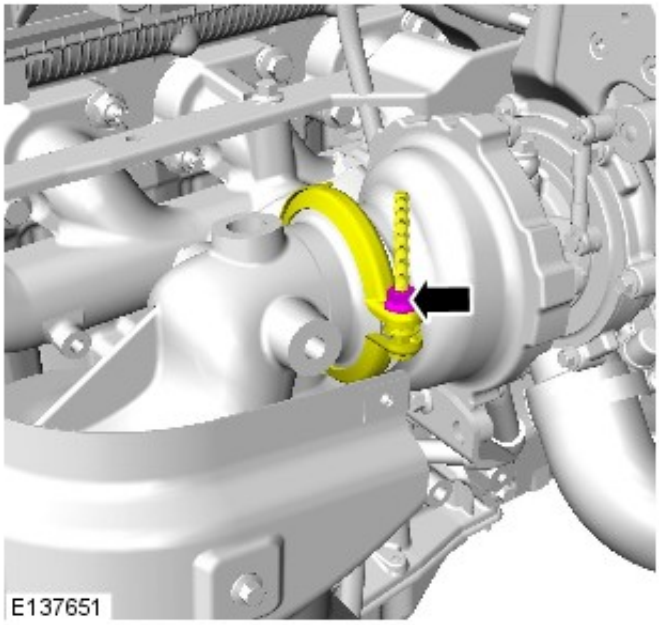

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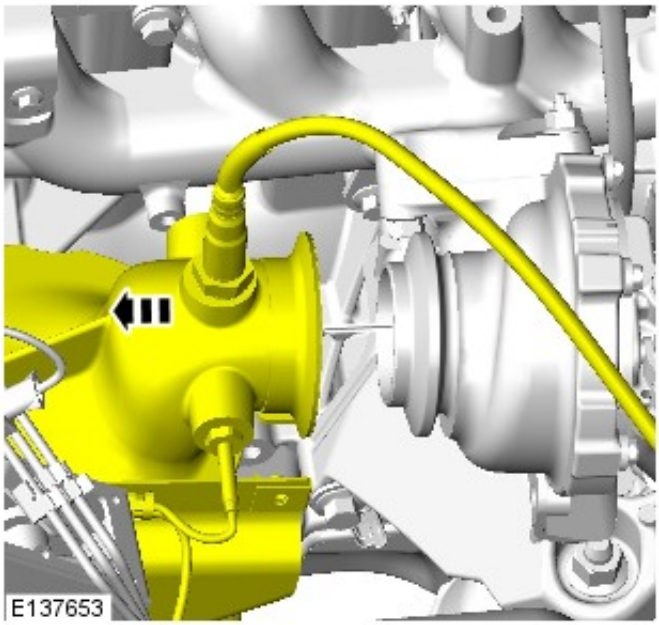

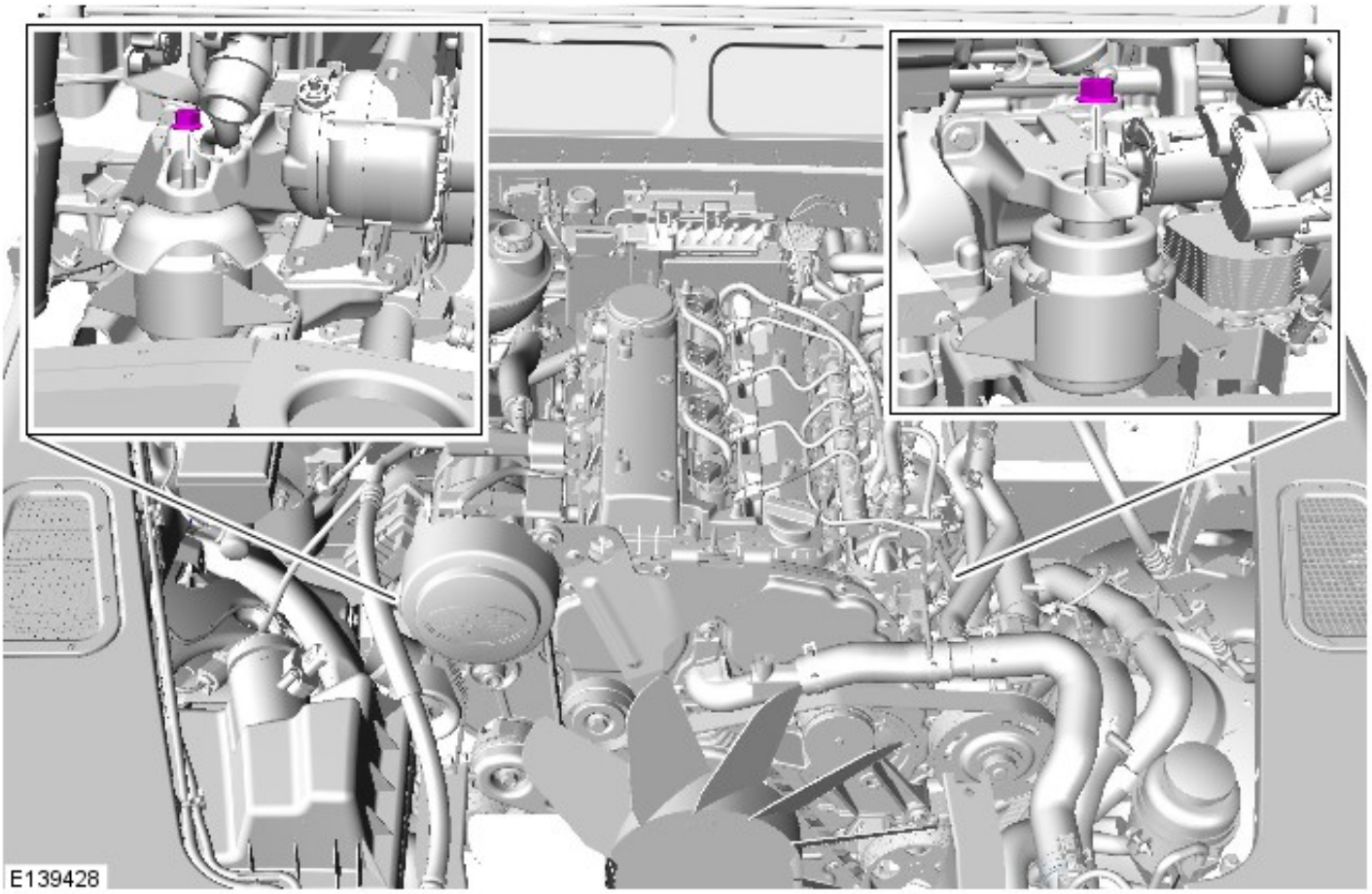

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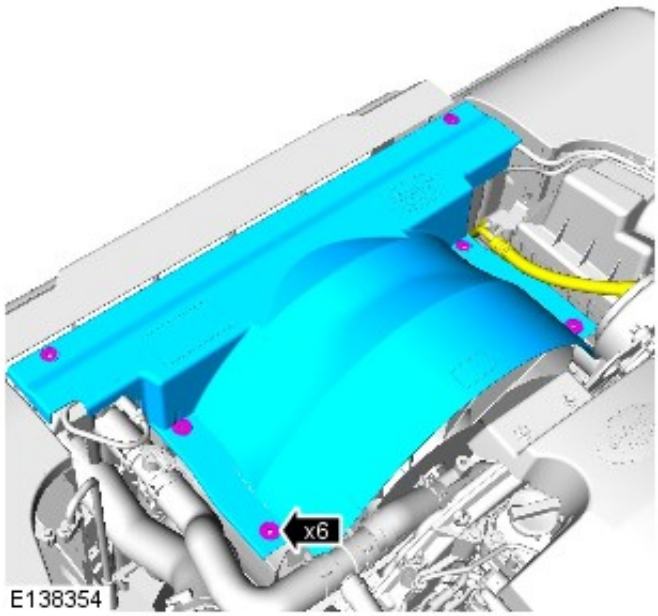
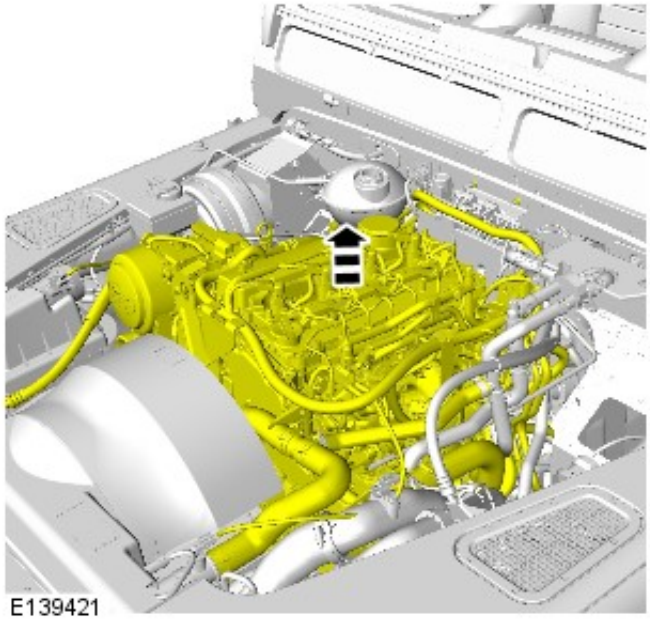


19. CAUTION: Raise the engine assembly using suitable lifting equipment. Make sure the attached and surrounding components are not damaged during this step.



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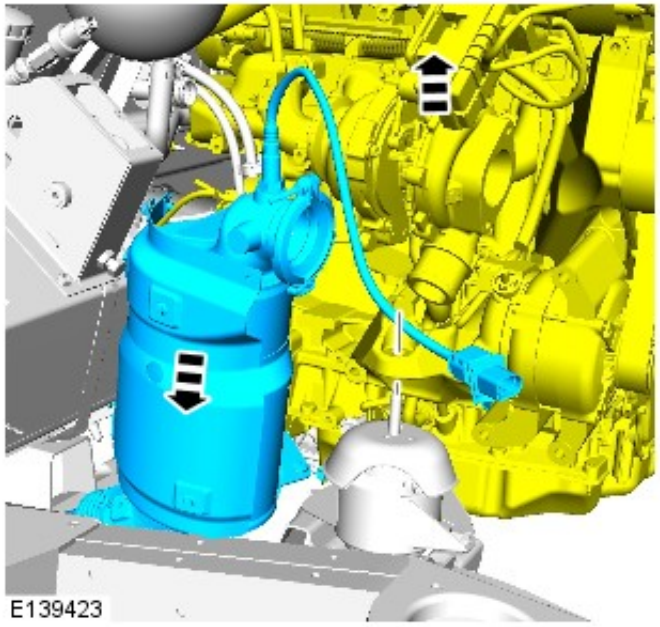
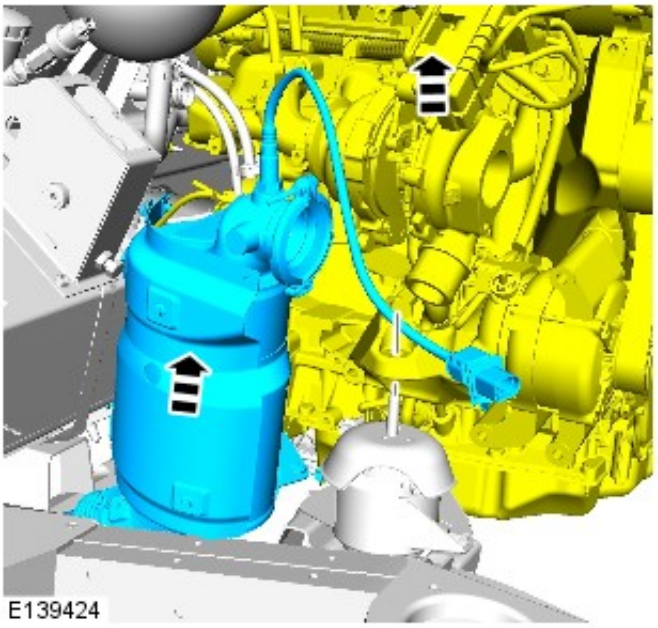


Installation

1.



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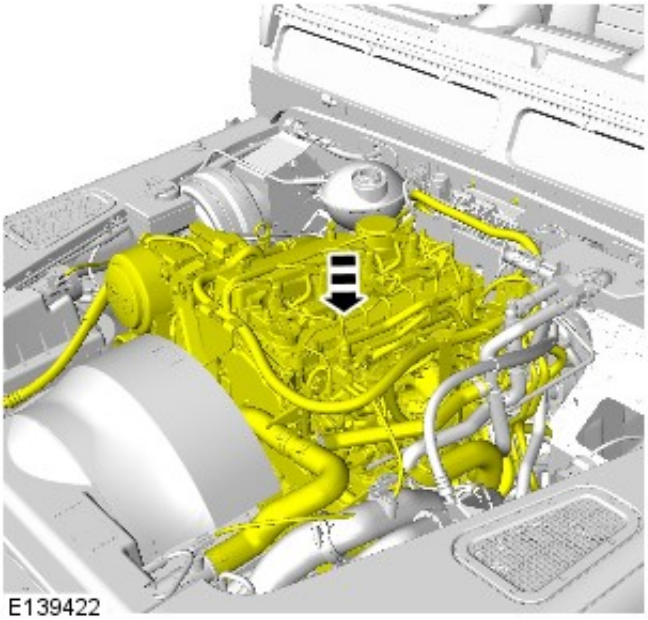

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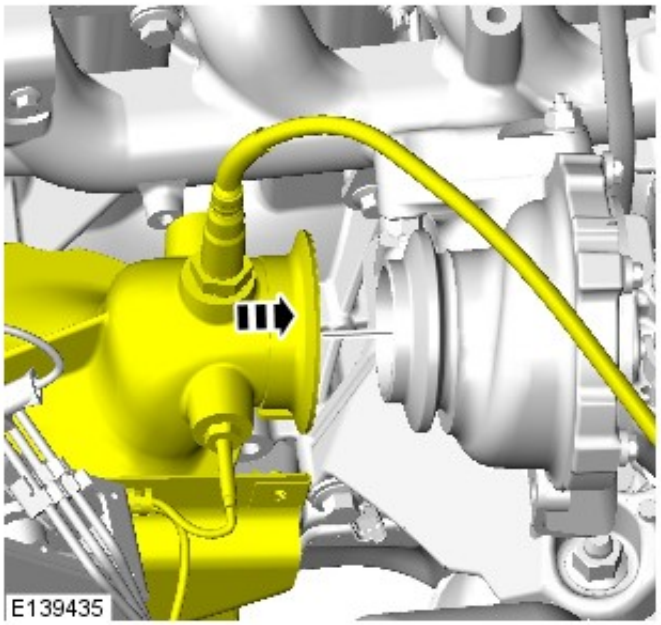
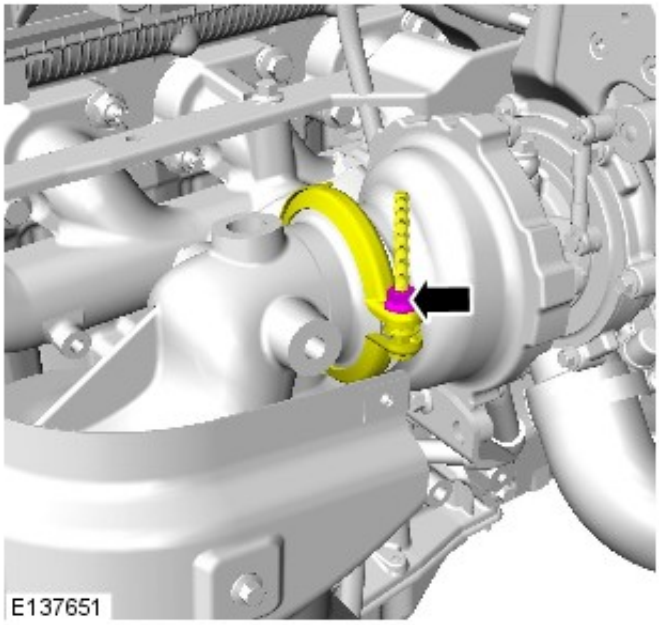
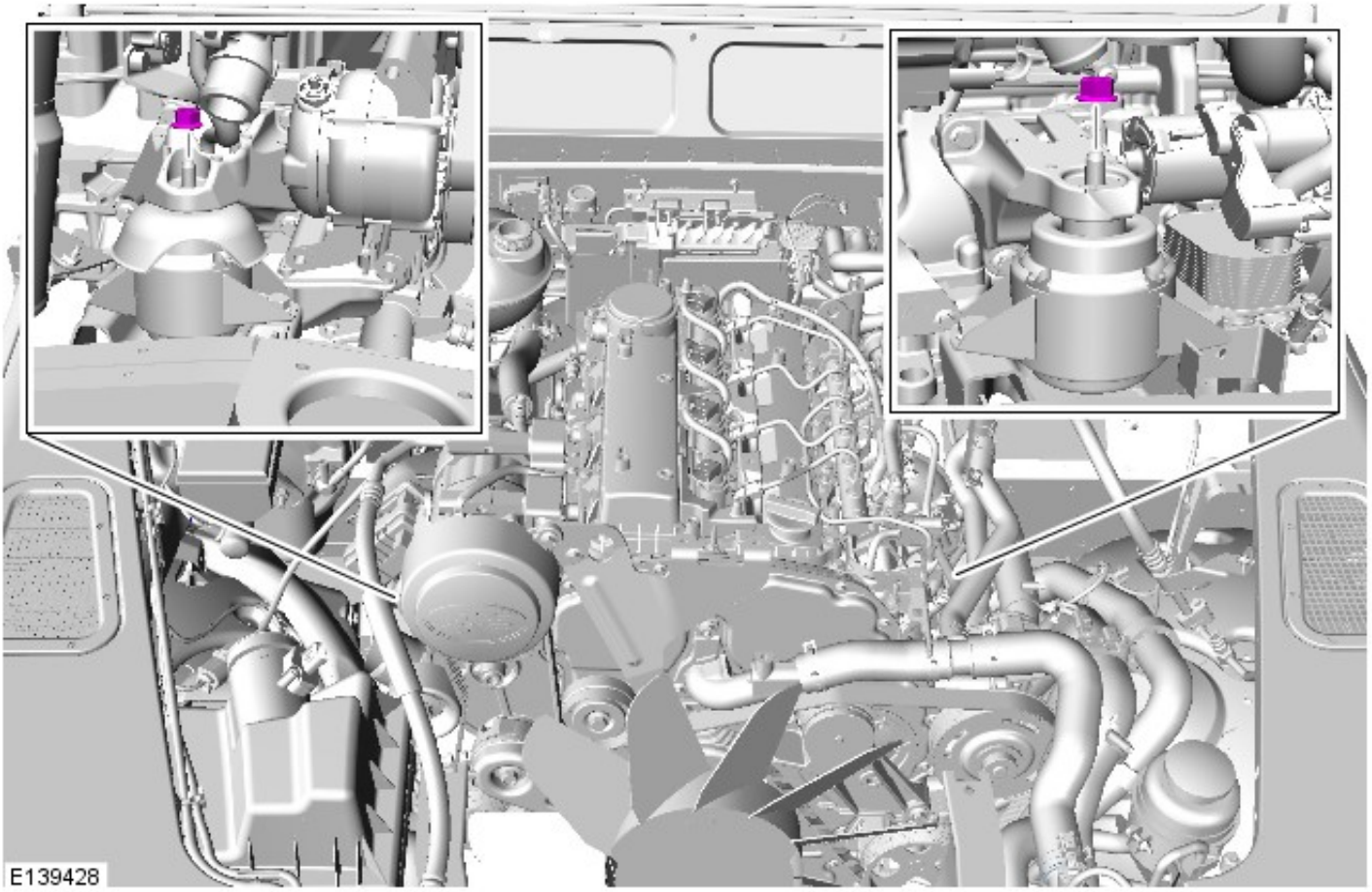


4. Torque: 10Nm

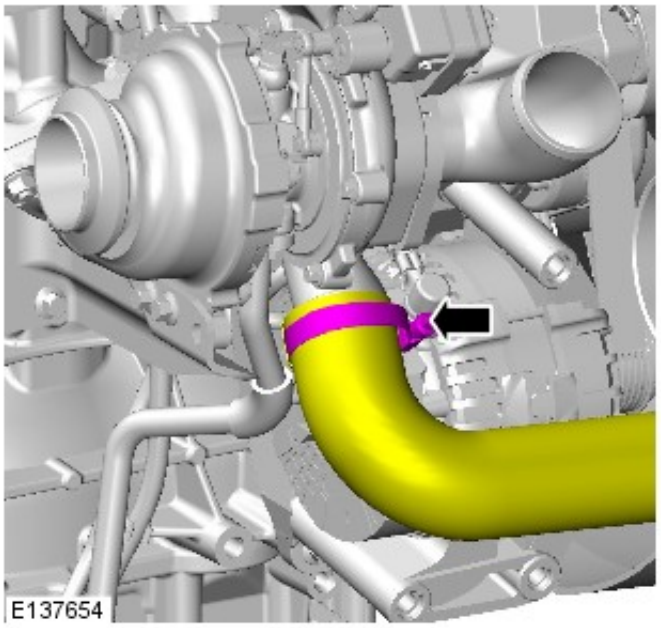
4. Torque: 10Nm



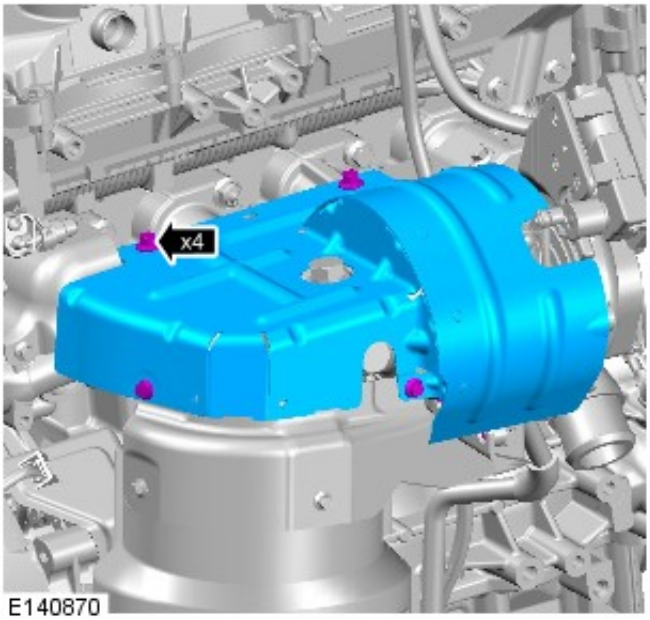
5. Torque: 80Nm



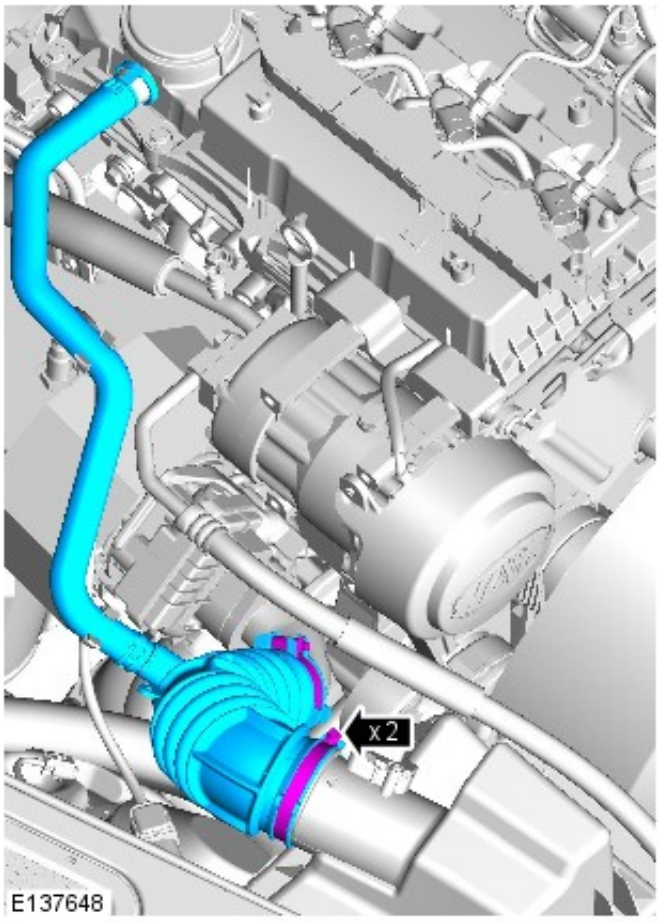
6. Torque: 3Nm



7. Torque: 10Nm



8. Torque: 3Nm



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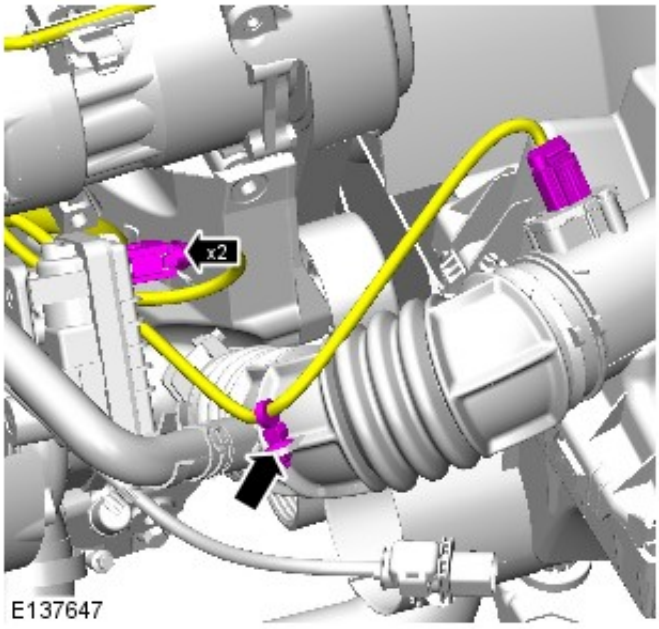

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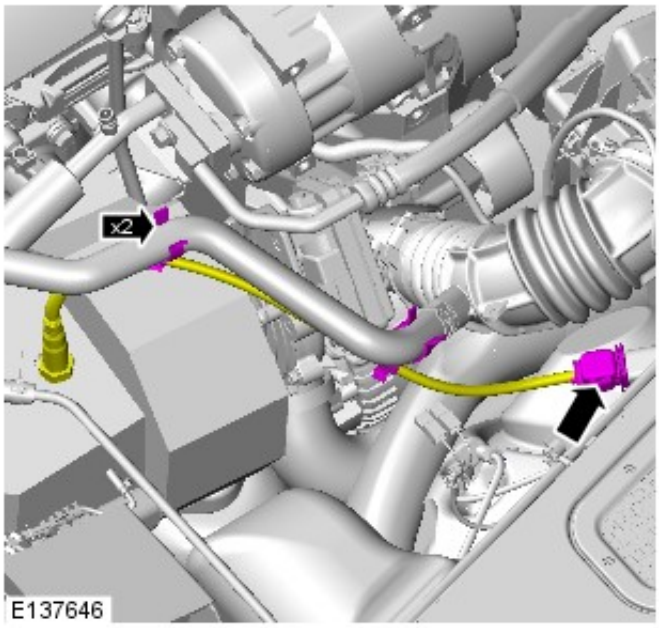

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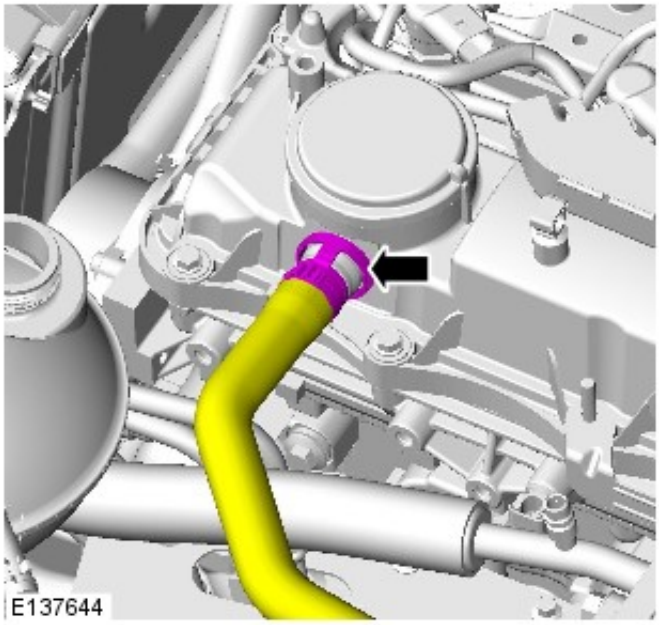

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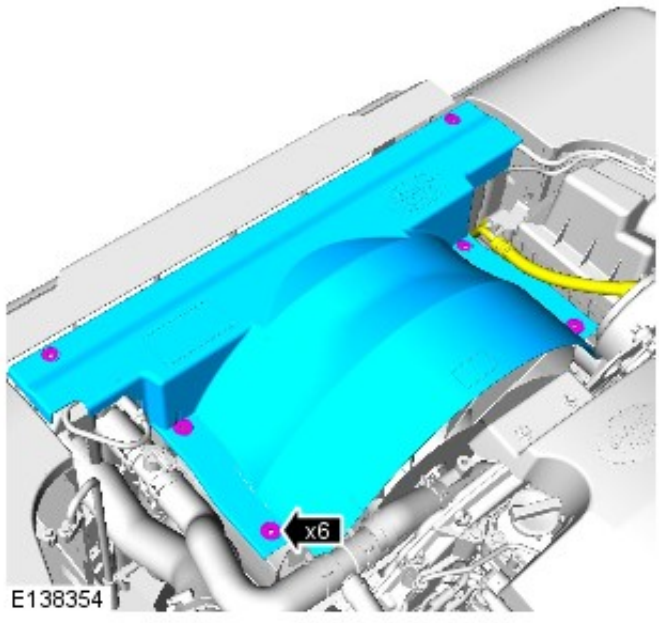
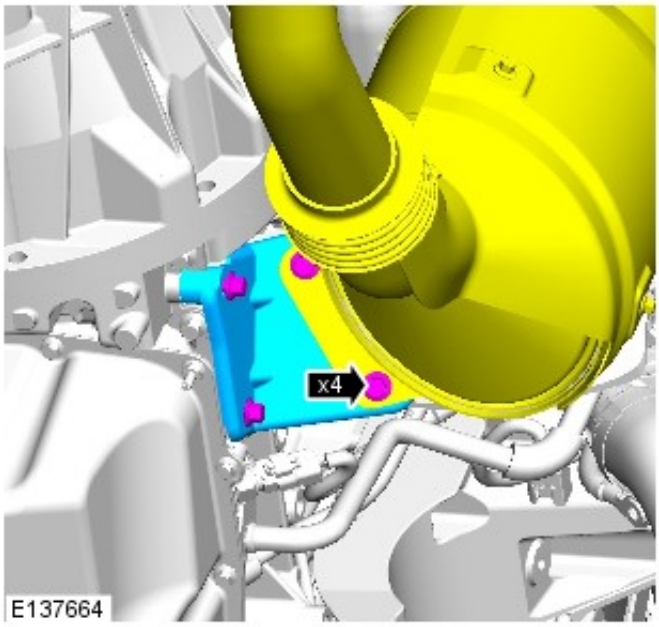


13. For additional information, refer to: Engine Cover (501-05 Interior

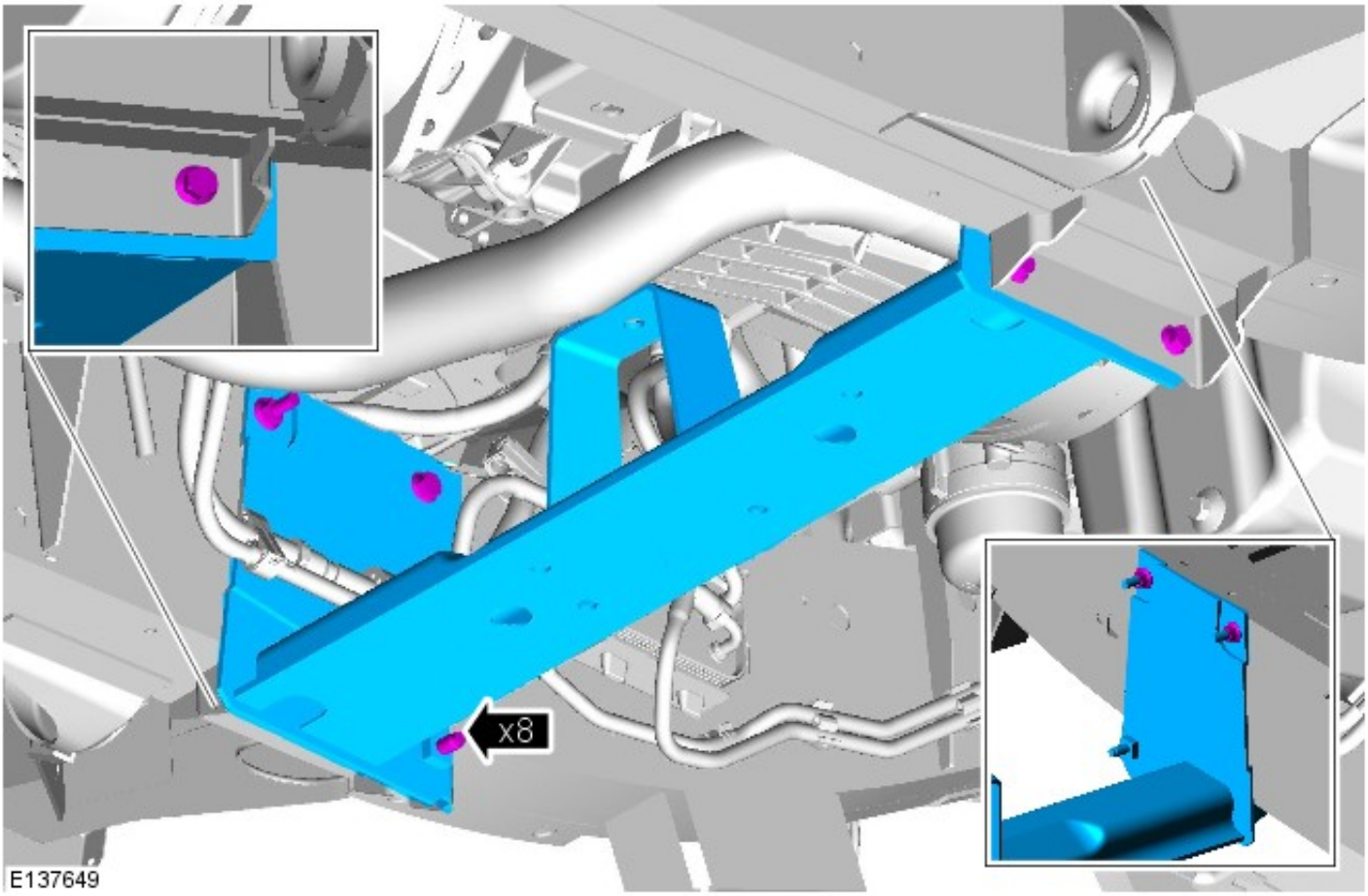
13. For additional information, refer to: Engine Cover (303-05 Interior Trim and Ornamentation, Removal and Installation).

14. Raise the vehicle on lift.

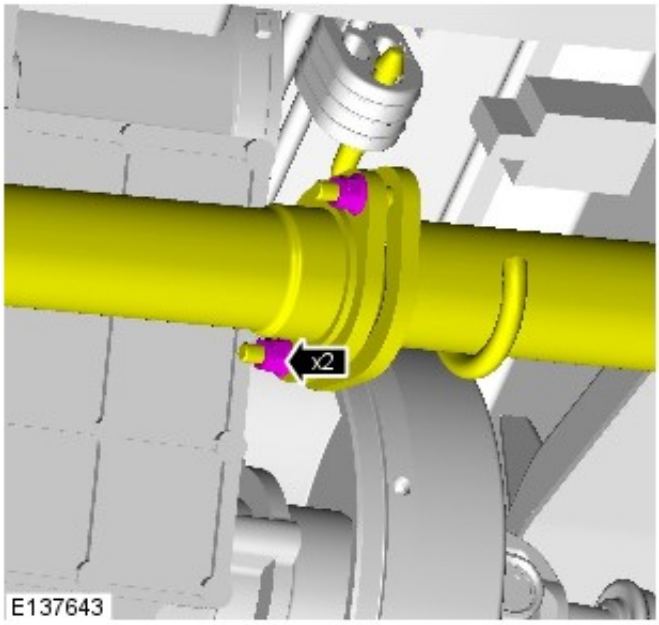
15. Torque: 25Nm



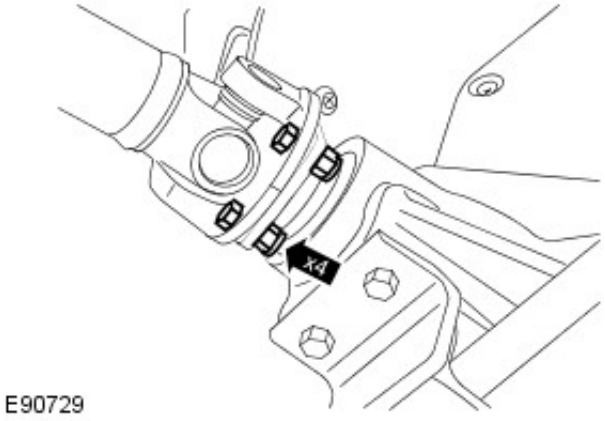
16. Torque: 80Nm



17. Torque: 25Nm



18. Torque: 47Nm



19. For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

Published: 27-Sep-2011

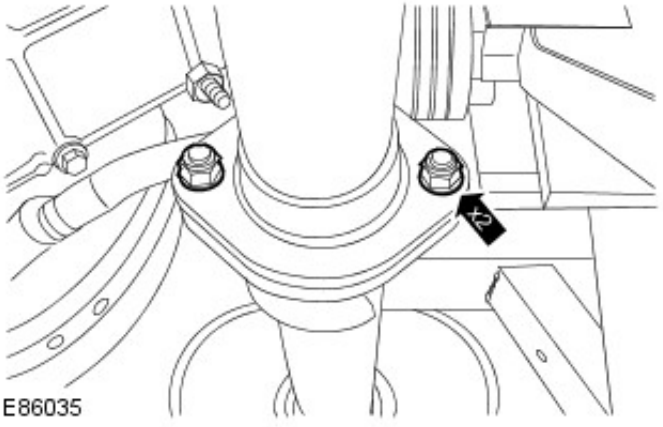
Exhaust System - ID4 2.2L Diesel - Front Muffler

Removal and Installation

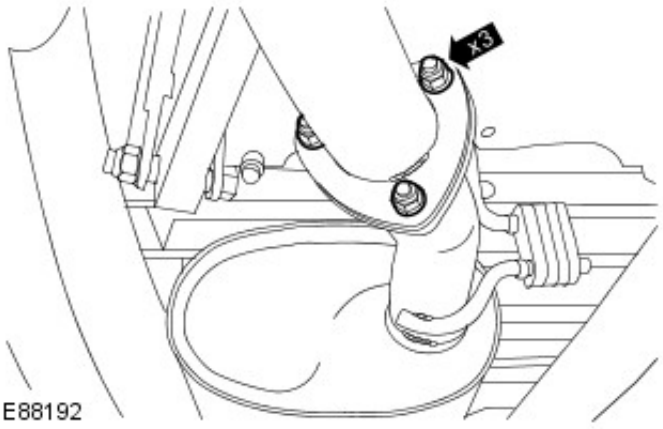
Removal

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

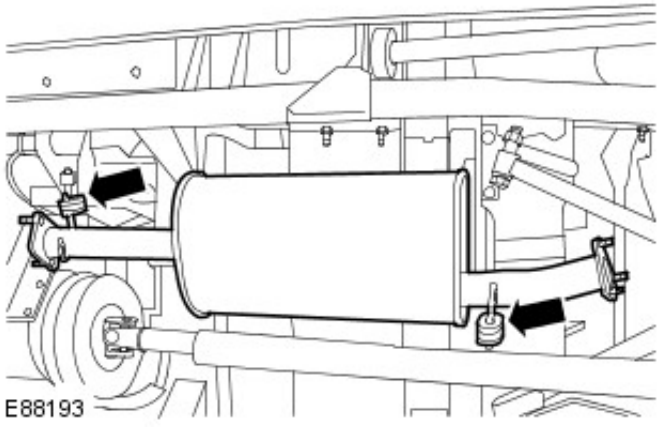
   Raise and support the vehicle.



2. Release the front muffler from the diesel particulate filter.
   1. Remove and discard the 2 nuts.



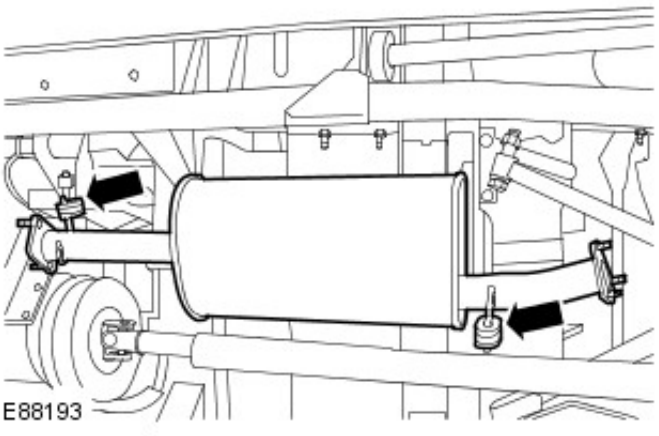
3. Release the front muffler from the tail pipe.
   1. Remove and discard the 3 nuts.
   2. Remove and discard the gasket.



4. Remove the intermediate pipe and front muffler.
   1. Release the 2 rubber mountings.

Installation

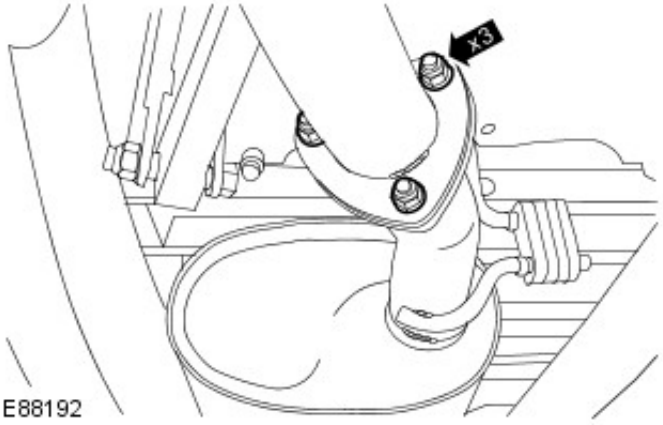
1. Install the intermediate pipe and front muffler.
   1. Secure the 2 rubber mountings.



2. NOTE: Install a new gasket.

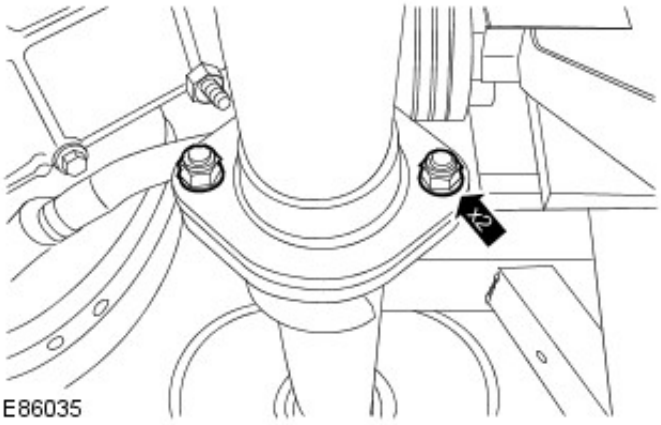
   NOTE: Install new nuts.

   Secure the front muffler to the tail pipe.
   1. Tighten to 25 Nm (18 lb.ft).



3. NOTE: Install new nuts.

   Secure the front muffler to the diesel particulate filter.
   1. Tighten to 25 Nm (18 lb.ft).



Published: 02-Feb-2012

Exhaust System - ID4 2.2L Diesel - Diesel Particulate Filter (DPF)

Removal and Installation

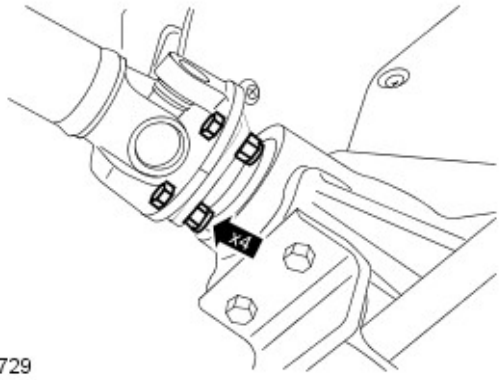
Removal

1. For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

2. 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.

3.



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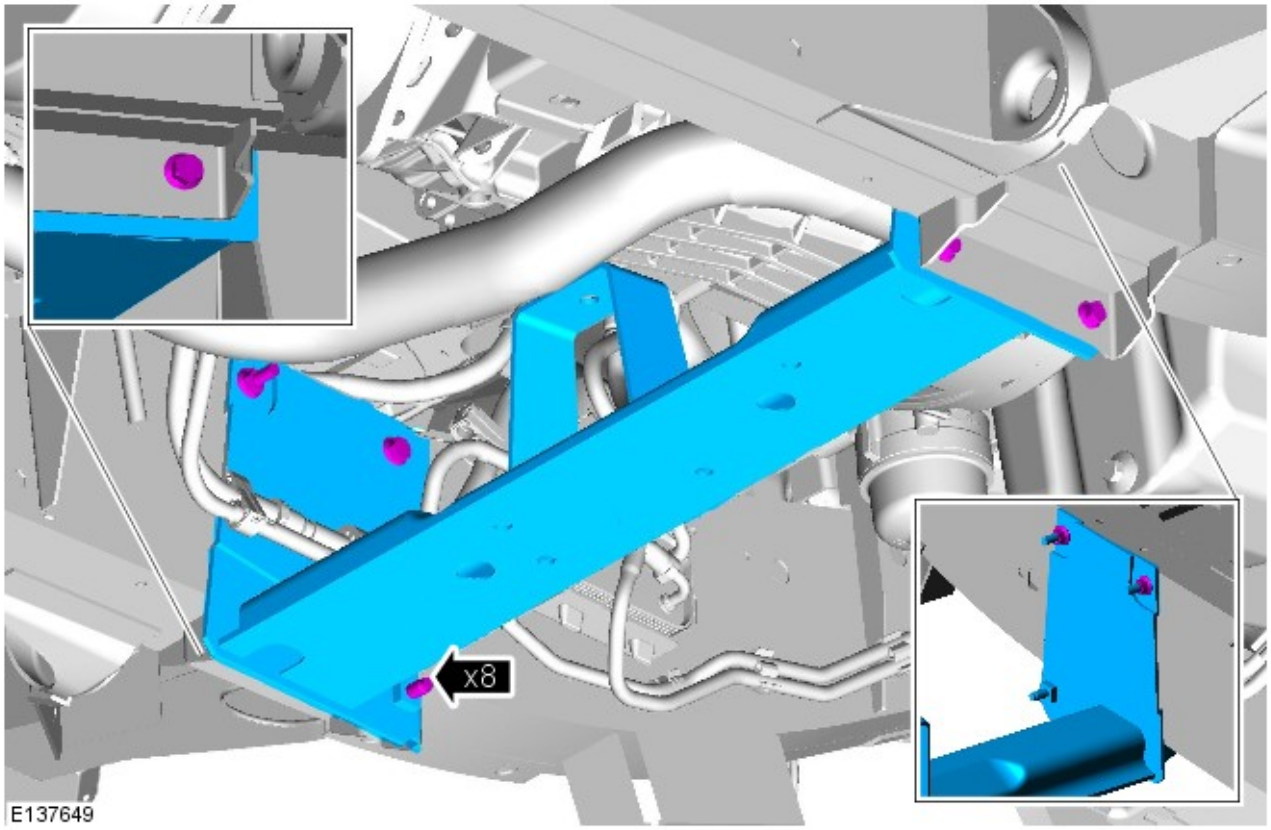

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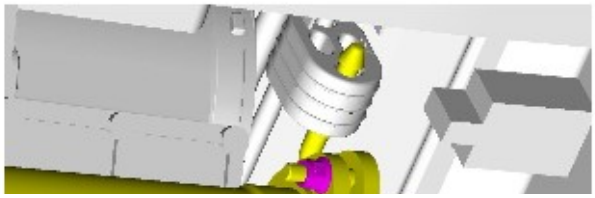

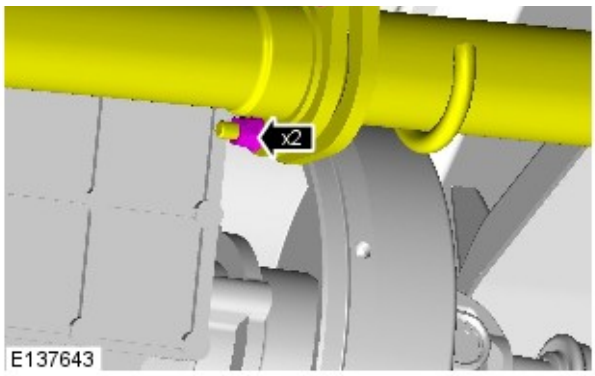

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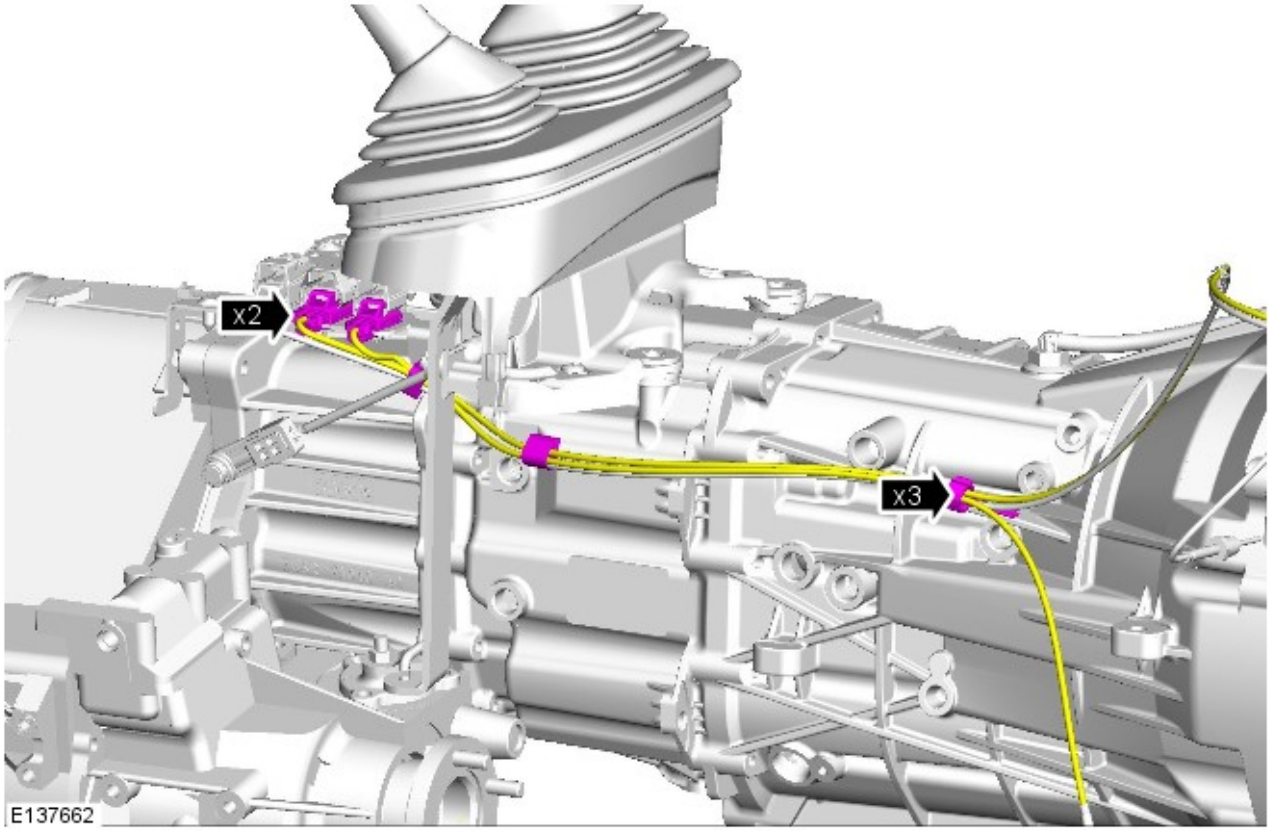

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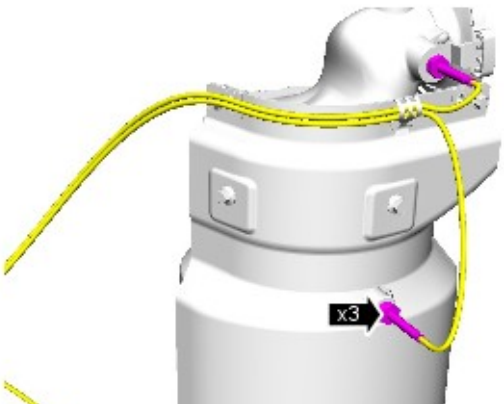

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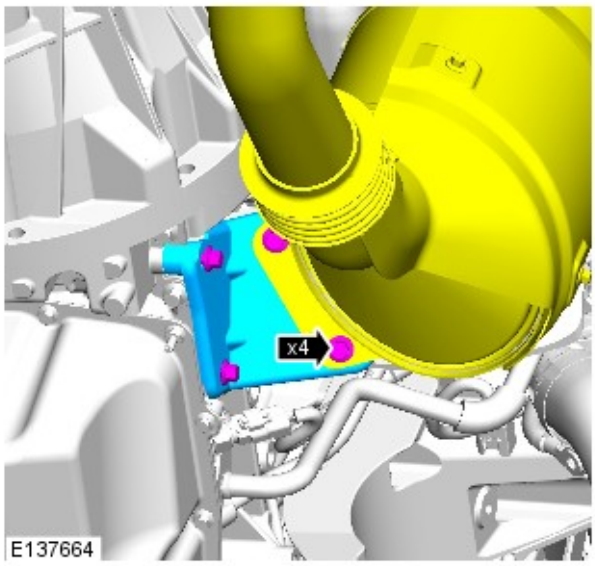
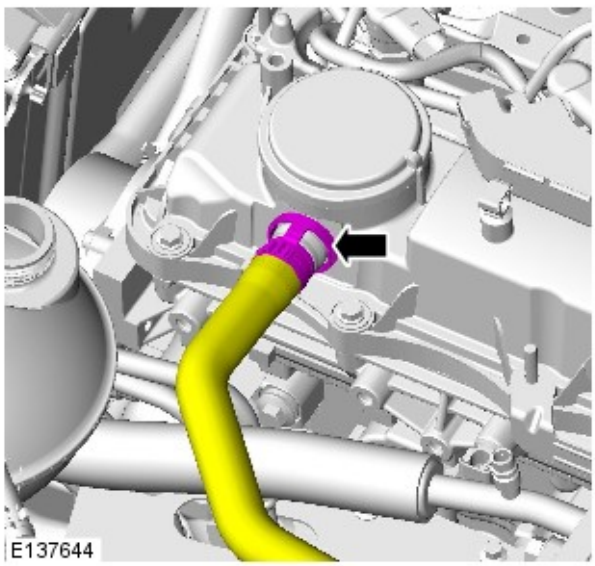


9. Lower the vehicle.

10. For additional information, refer to: Engine Cover (501-05 Interior Trim and Ornamentation, Removal and Installation).

11.



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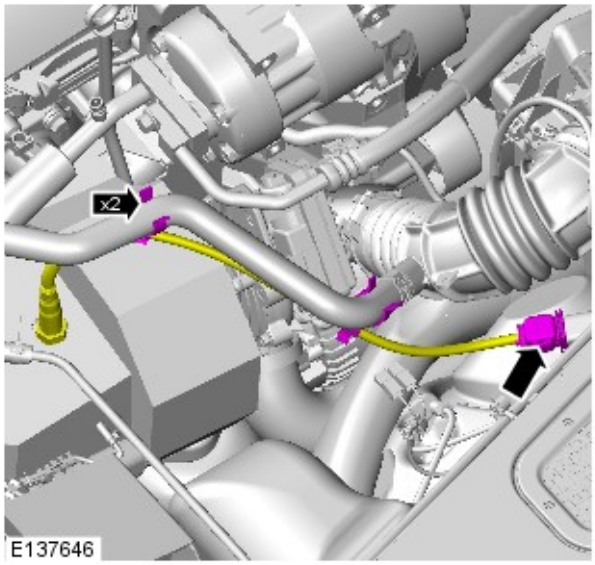

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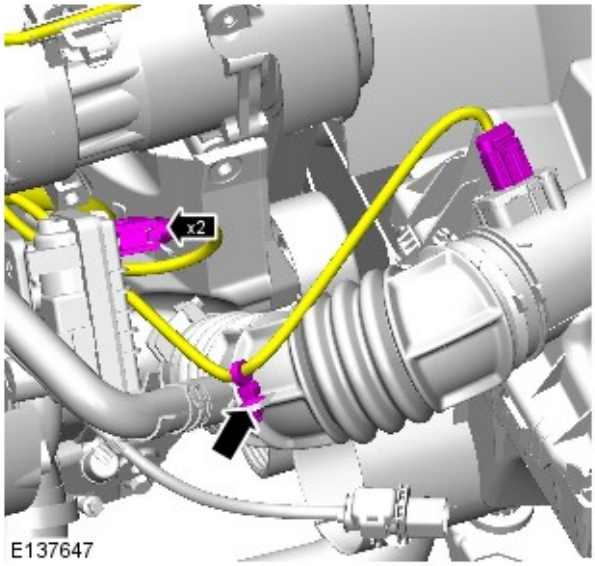

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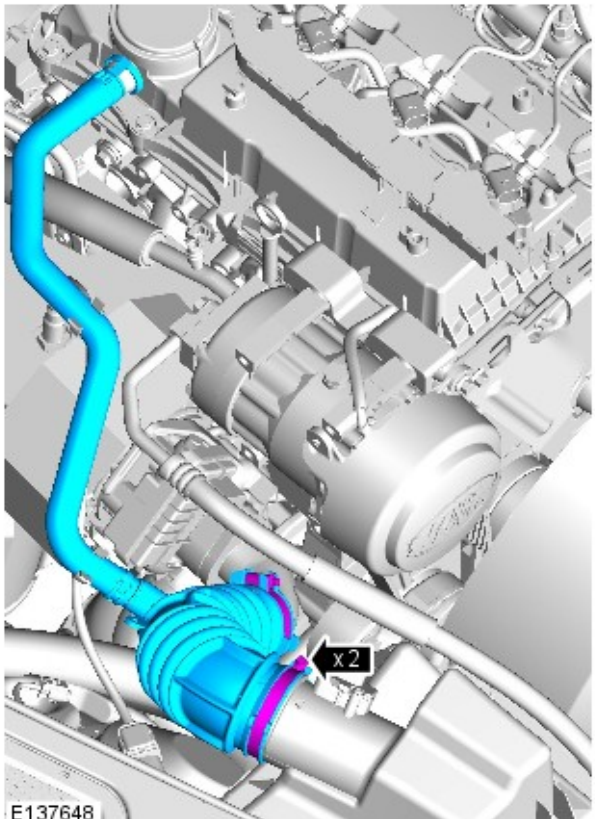

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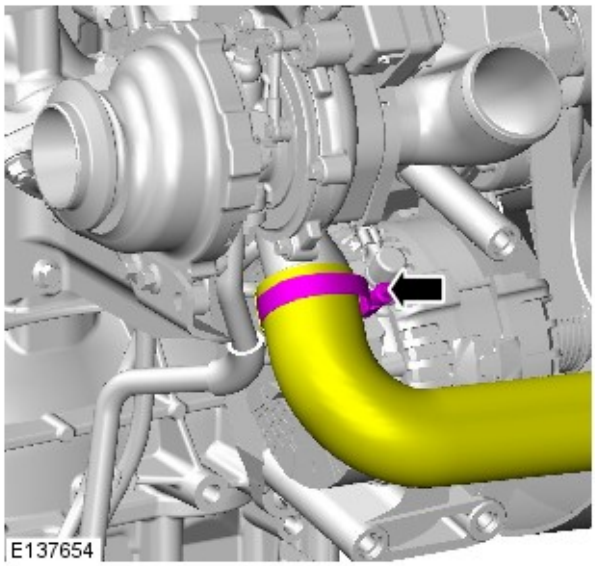

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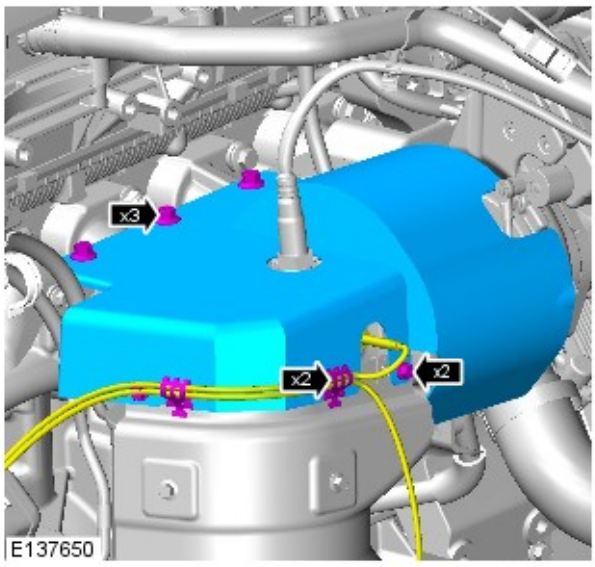

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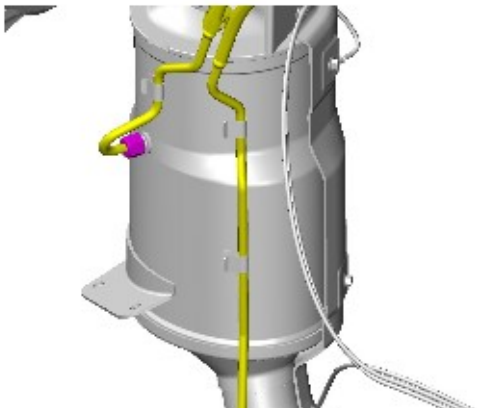

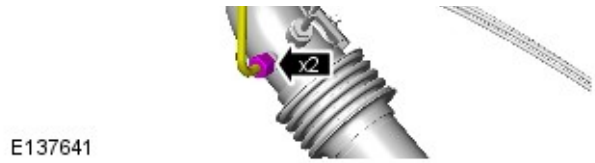

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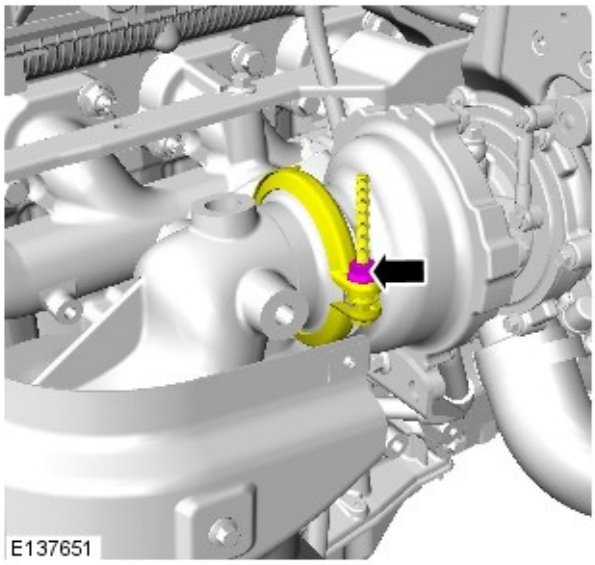

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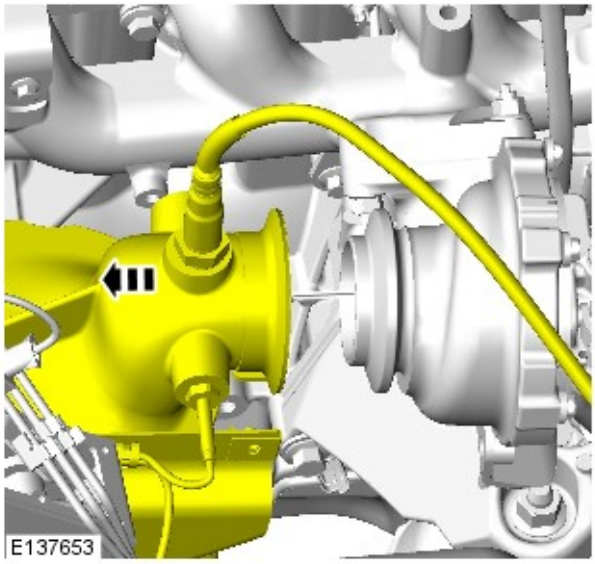

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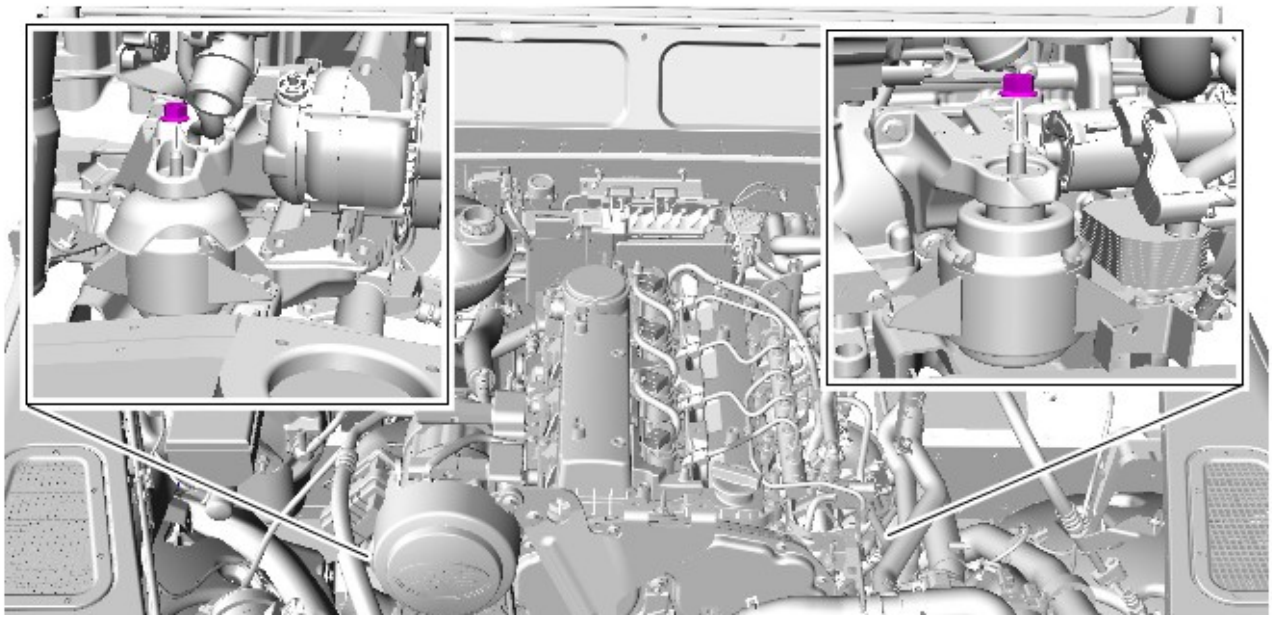

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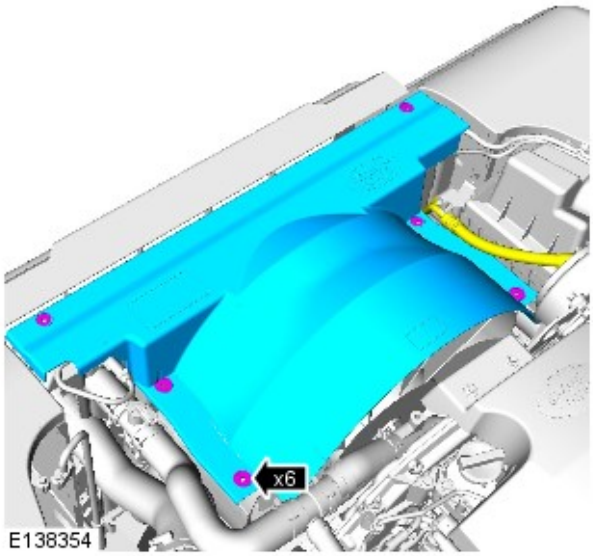
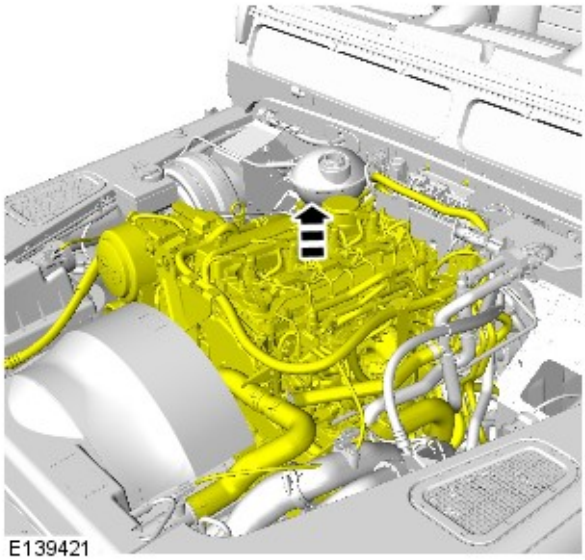


22. CAUTION: CAUTION: Raise the engine assembly using suitable lifting equipment. Make sure the attached and surrounding components are not damaged during this step.



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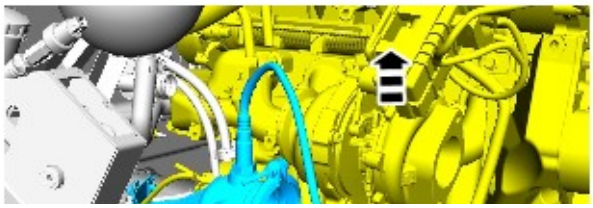
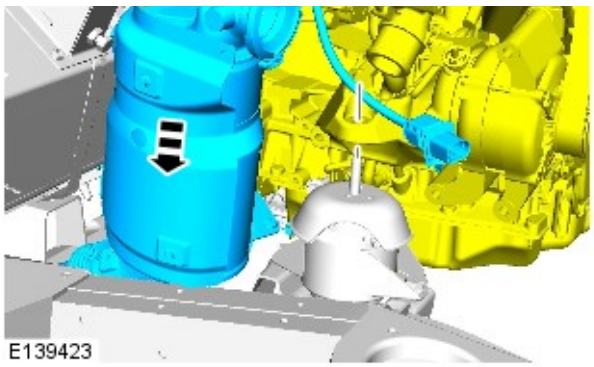
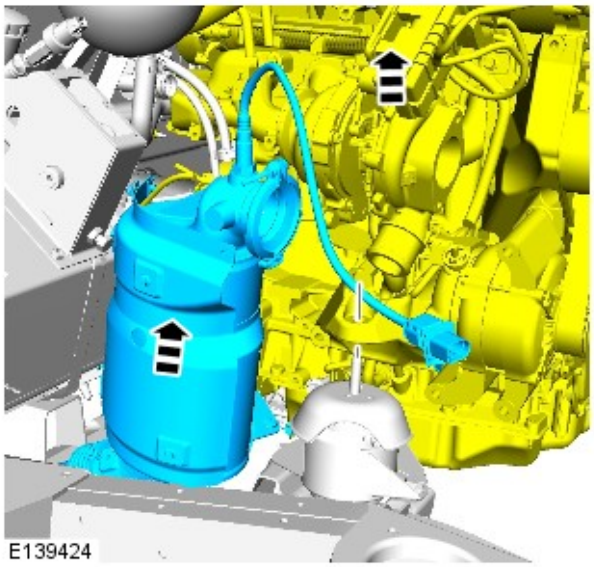




Installation

1.



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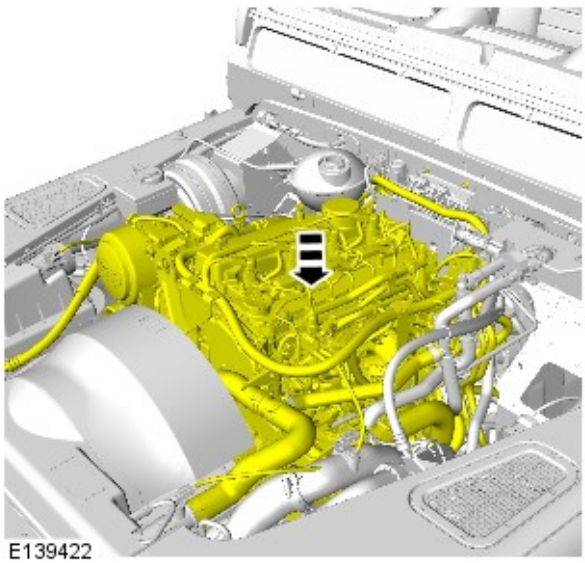

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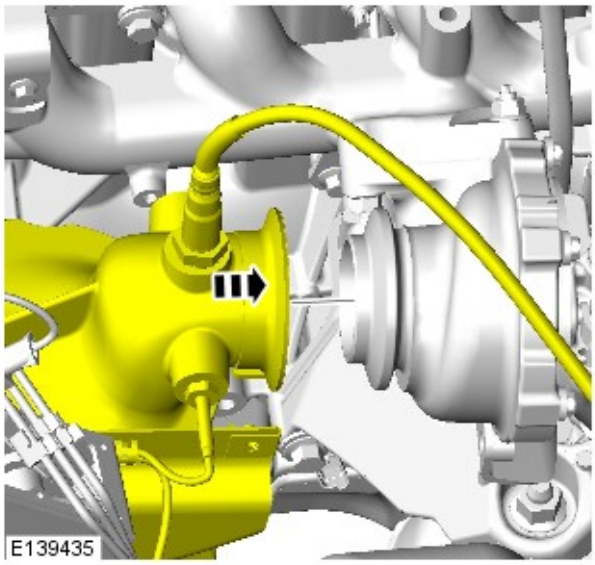
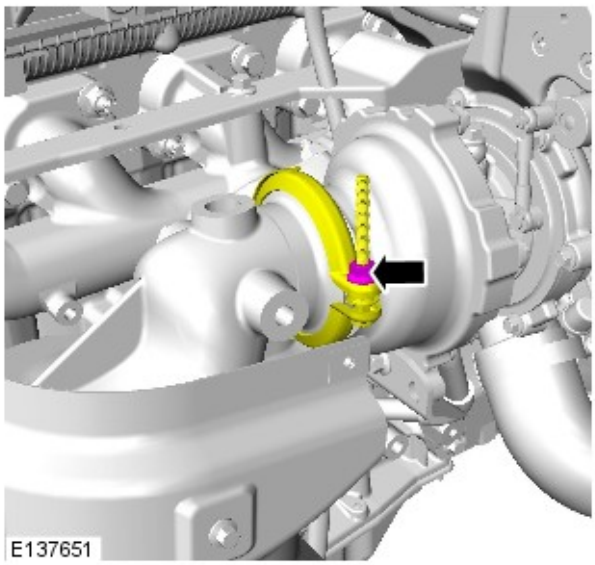
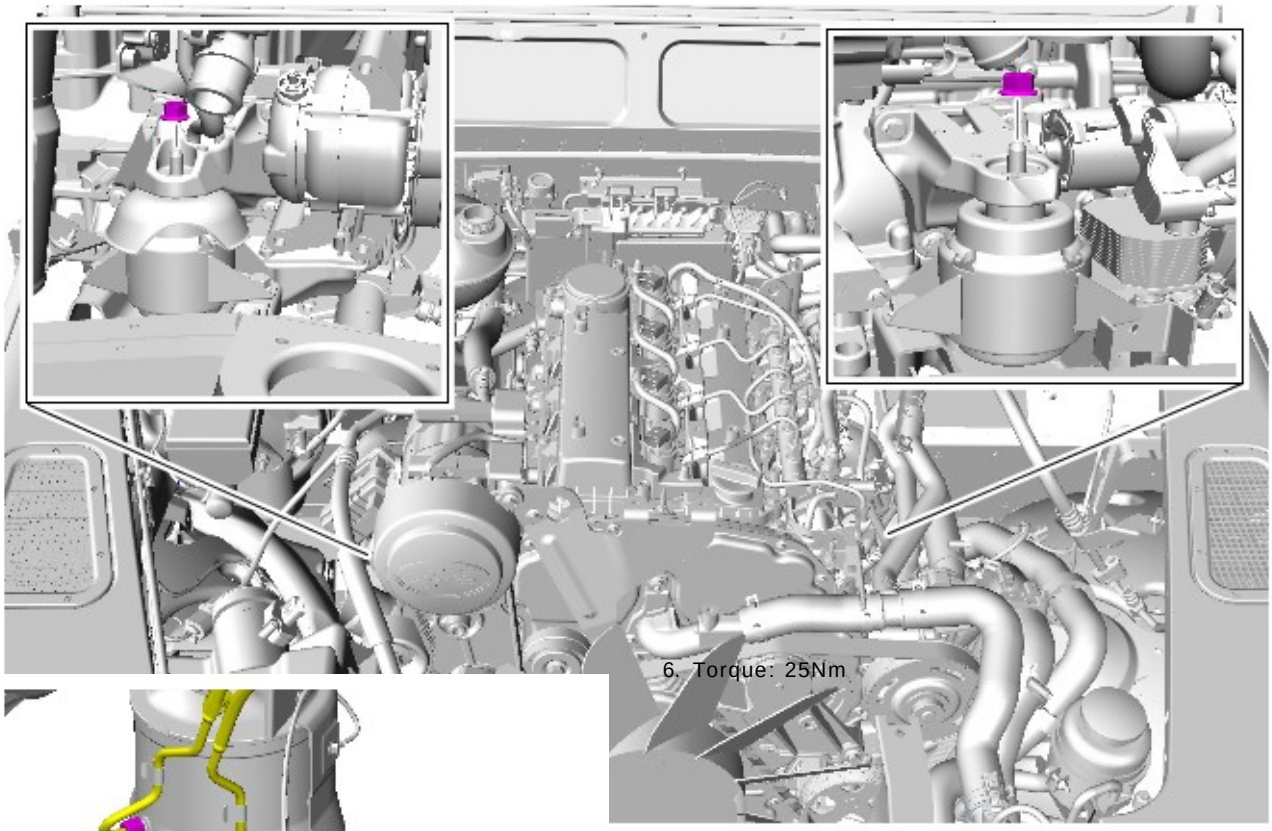


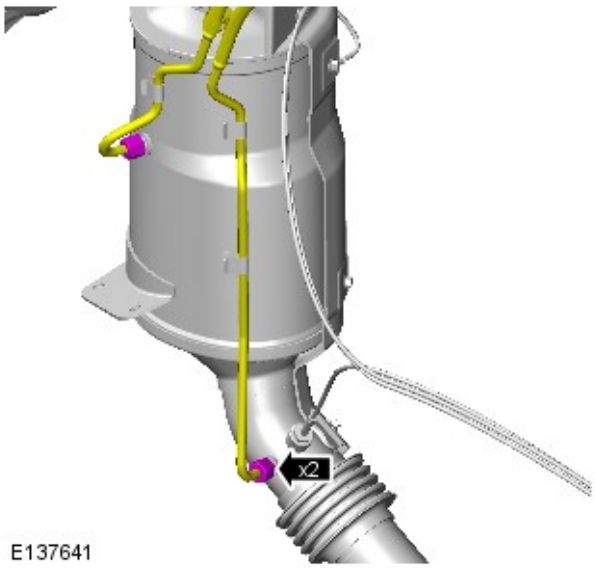
4. Torque: 10Nm



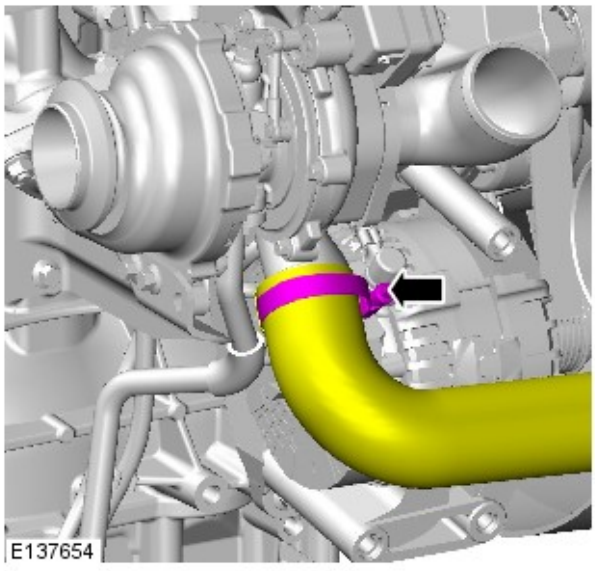
5. Torque: 80Nm



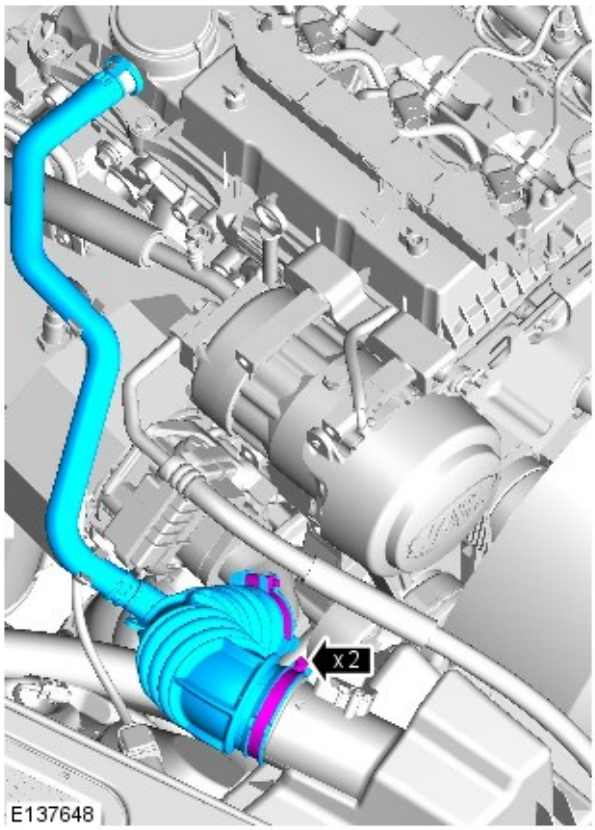
6. Torque: 25Nm



7. Torque: 3Nm



8. Torque: 3Nm



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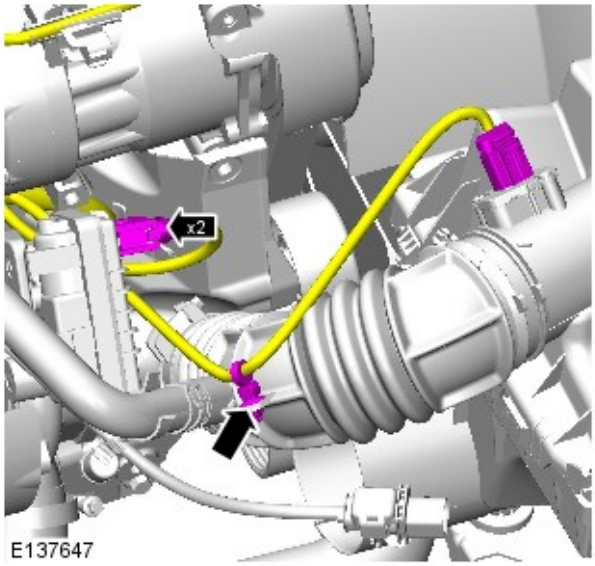

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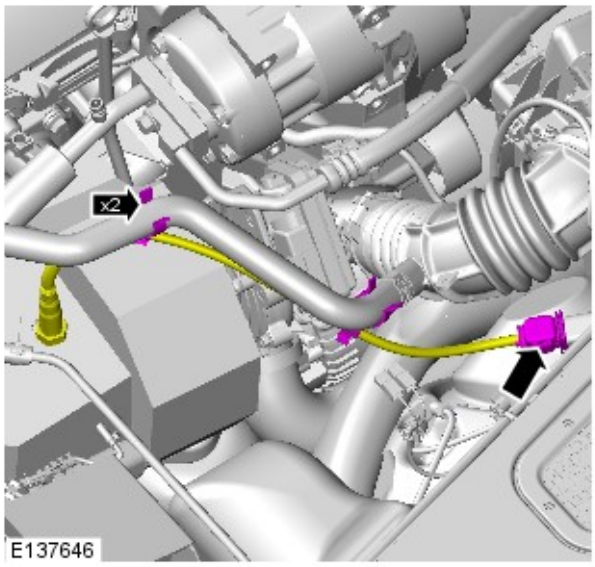

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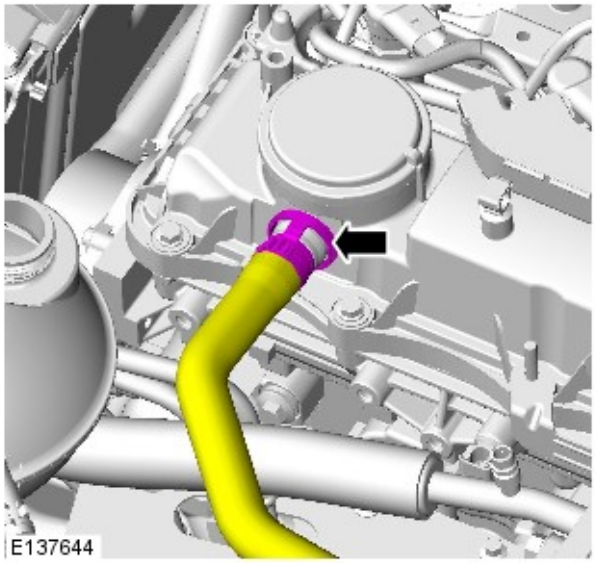

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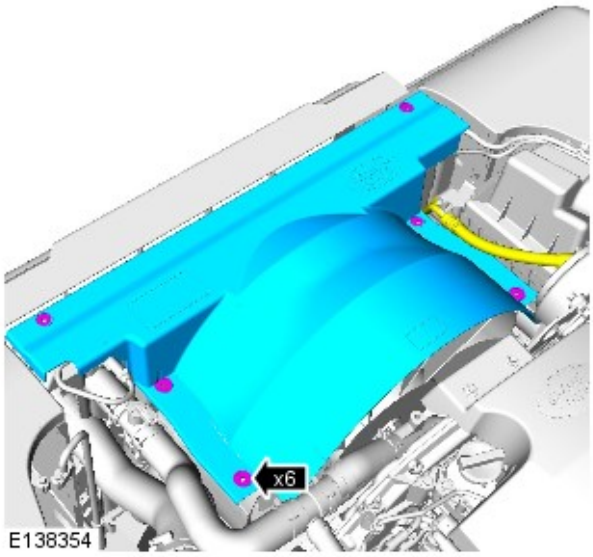
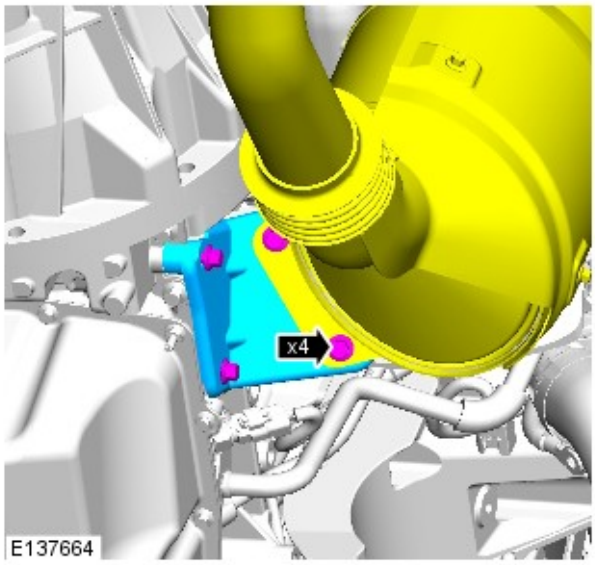


13. For additional information, refer to: Engine Cover (501-05 Interior Trim and Ornamentation, Removal and Installation).

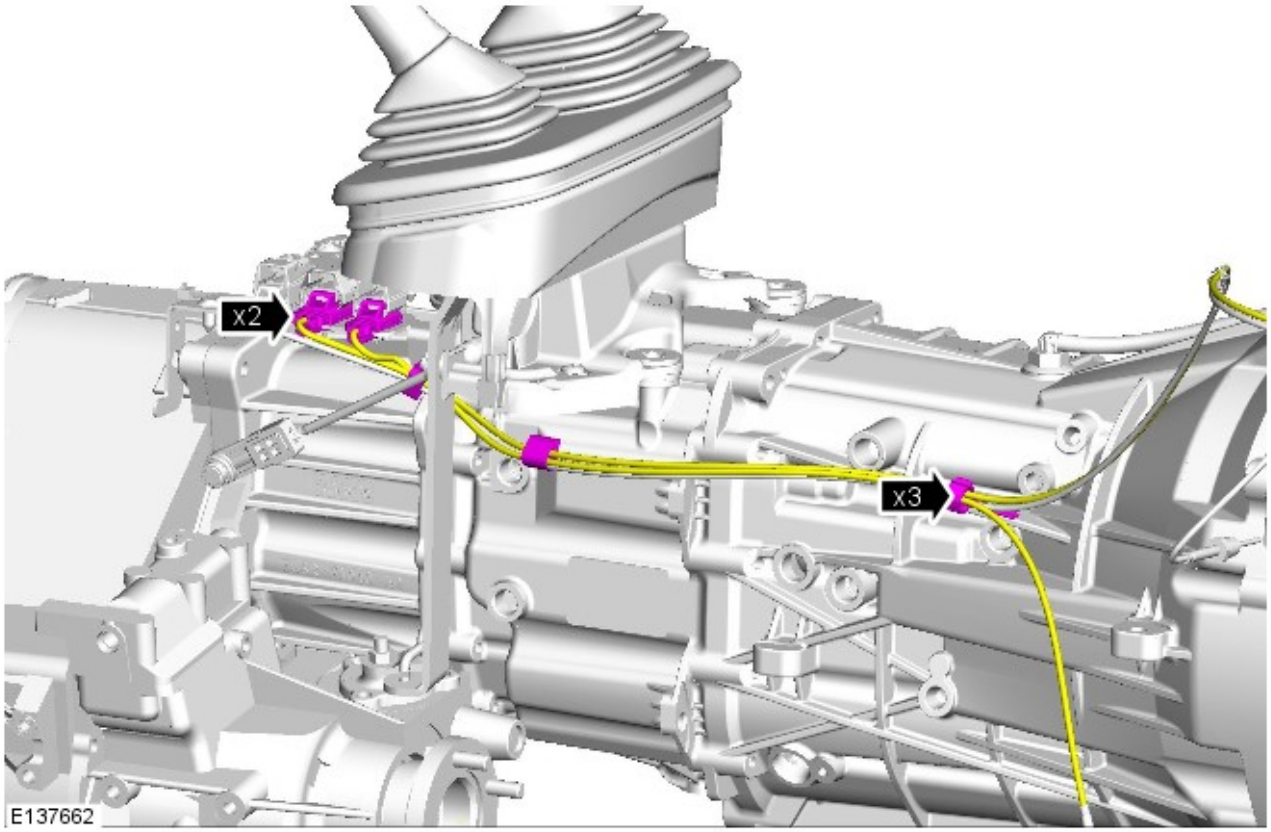
14. Raise the vehicle on lift.

15. Torque: 25Nm

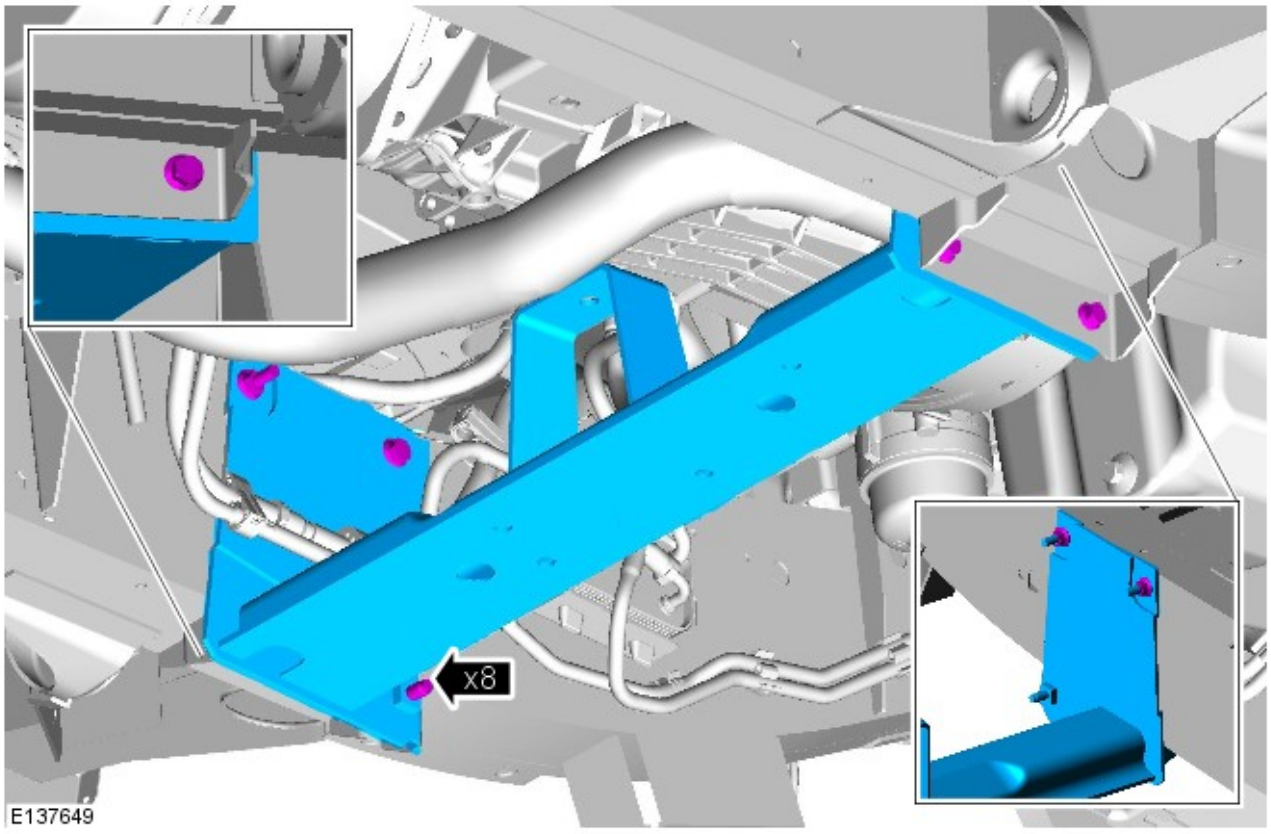


16. Torque: 25Nm

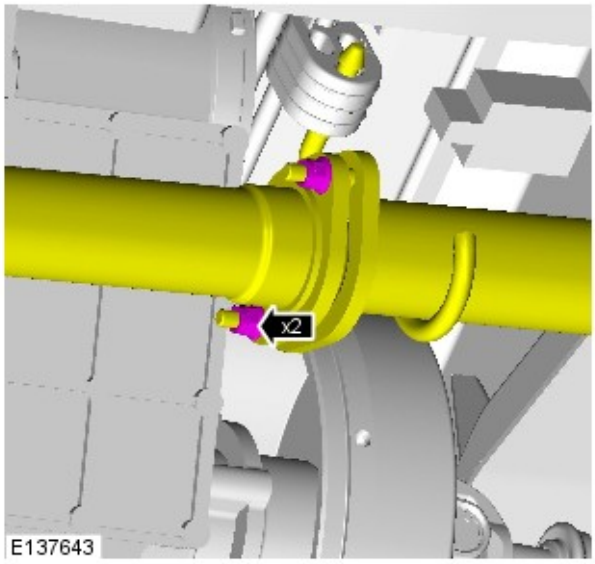
17.



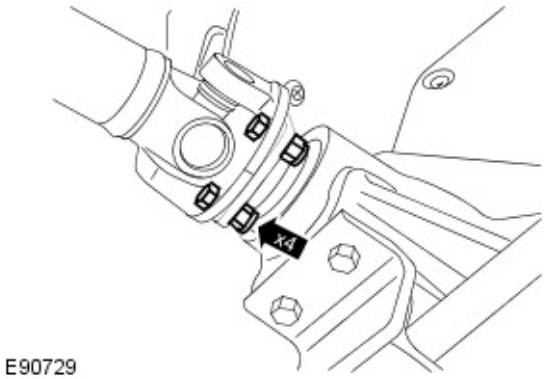
18. Torque: 80Nm



19. Torque: 25Nm



20. Torque: 47Nm



21. For additional information, refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

22. If a new unit is installed, configure using the approved diagnostic tool.