

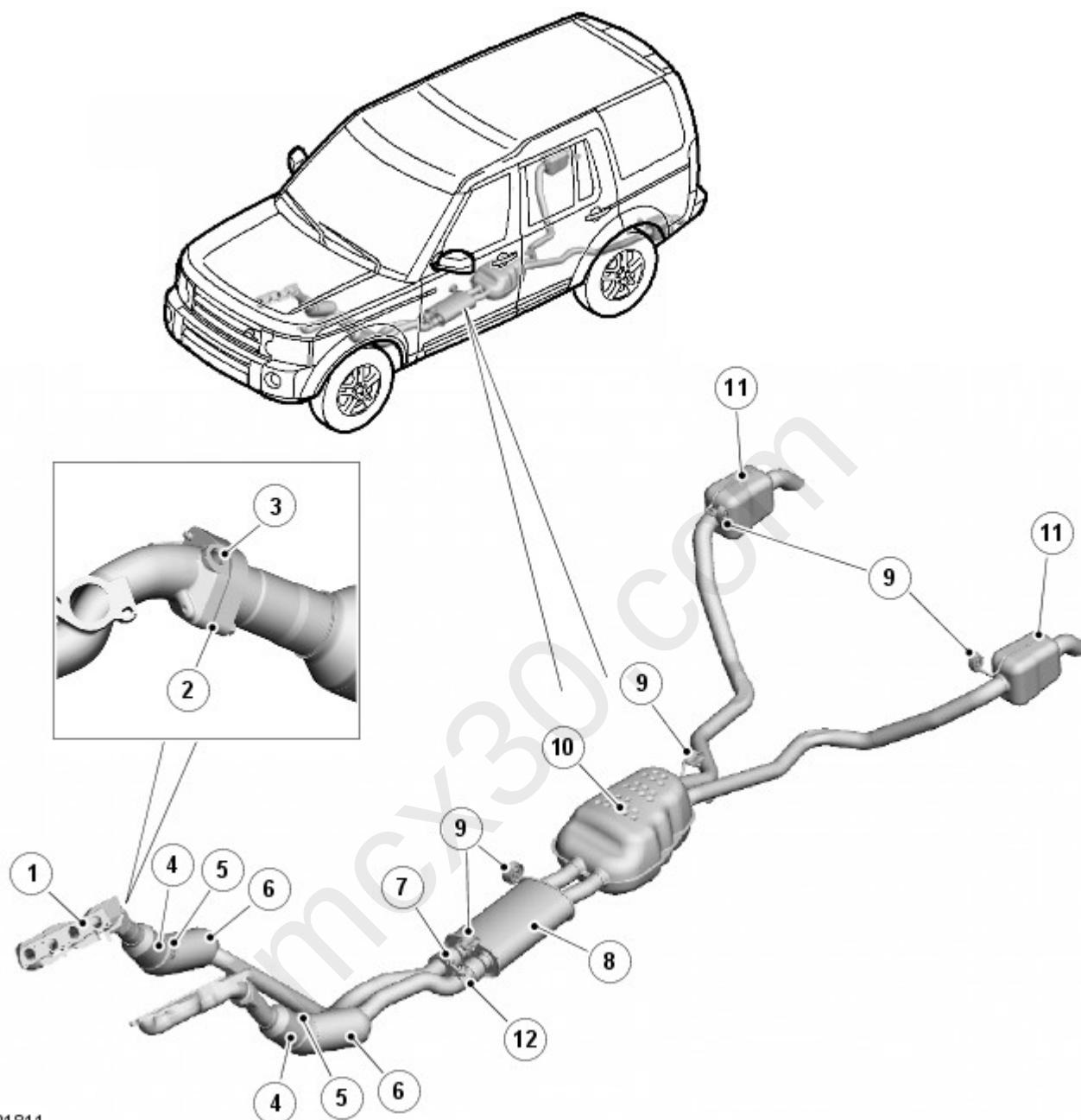
Exhaust System - V8 5.0L Petrol -**Torque Specifications**

Description	Nm	lb-ft	lb-in
Heated oxygen sensor (HO2S)	48	35	-
Catalyst monitor sensor	48	35	-
Catalytic converter retaining clamp	55	40	-
Catalytic converter retaining bolts to exhaust manifold	25	16	-
Exhaust manifold retaining bolts	18	13	-

Exhaust System - V8 5.0L Petrol - Exhaust System

Description and Operation

5.0L V8 COMPONENT LOCATION - FROM 2010MY



E121811

Item	Part Number	Description
1	-	Exhaust manifold
2	-	Flange joint - manifold to front section
3	-	Pre-catalyst Heated Oxygen Sensor (HO2S) mounting boss
4	-	Pre-catalytic converter
5	-	Post catalyst HO2S mounting boss
6	-	Main catalytic converter
7	-	Flange joint - Right Hand (RH) front section to rear section
8	-	Silencer - Front
9	-	Mounting rubber (5 off)
10	-	Silencer - Center
11	-	Silencer - Rear
12	-	Clamp joint - Left Hand (LH) front section to rear section

EXHAUST SYSTEM

The 5.0L V8 exhaust system is fabricated from stainless steel and is supplied as three separate assemblies; a Left Hand (LH) front section incorporating a catalytic converter, a Right Hand (RH) front section incorporating a catalytic converter

and a rear section incorporating a front silencer, a centre silencer and two rear silencers.

The system is attached to the underside of the body with 5 mounting rubbers which are located on mild steel hanger bars that are welded to the system. The mounting rubbers locate on corresponding hangers which are welded to the underside of the vehicle body. The system is routed mainly on the inside of the LH chassis longitudinal before splitting near the rear differential to exit at each side of the rear of the vehicle.

The system has service repair items available. Indentations in the rear section, between the center and the rear silencers, show the cut points for the service replacement rear silencers or front section. When a service repair section is used, the joint is connected using a sleeve and two clamps to connect the pipes at the cut points.

FRONT SECTION

Both front sections have a loose flange with two holes which provide for the attachment with two bolts onto the LH and RH exhaust manifolds. The flange is sealed by a tapered seat in the flange and a machined cone on the manifold.

Each flange is located on a short, straight pipe, which in turn is welded to the body of the catalytic converter. The pipe has a threaded boss which is welded over a hole to provide location for the Heated Oxygen Sensor (HO2S) in a position between the pre-catalyst and the main catalyst.

On the LH front section, the converter outlet pipe is a 60 mm (2.36 in) diameter tube, with a 1.5 mm (0.06 in) wall thickness, which is welded to the converter body. The rear of the outlet pipe is inserted into the flared end of the rear section. A clamp is used to compress and secure the joint.

On the RH front section, the converter outlet pipe is a 60 mm (2.36 in) diameter tube, with a 1.5 mm (0.06 in) wall thickness, which is welded to the converter body. The rear of the pipe curves left, under the transmission and then curves again to run parallel to the LH pipe. The end of the pipe has a welded flange with two holes which locate on two studs on the rear section and is secured with nuts. A metal gasket is used to seal the joint between the front and rear section flanges.

REAR SECTION

The rear section has a short 55 mm (2.16 in) diameter tube, with a 1.5 mm (0.06 in) wall thickness, which is flared to an inside diameter of 61 mm (2.4 in) to locate the LH front section. The tube is welded to the front silencer assembly. A second short 55 mm (2.16 in) diameter tube, with a 1.5 mm (0.06 in) wall thickness, has a welded flange with captive studs to provide attachment for the flange on the RH front section. This tube is also welded to the front silencer assembly.

The front silencer comprises a double skin and two end plates which are rolled together to give a capacity of 7.0 litres (427 in³). The silencer contains baffles and perforated tubes which reduce noise as the exhaust gases pass through the silencer. A hanger bar is welded to the front of the silencer and provides for the location of a mounting rubber.

The silencer has two short 55 mm (2.16 in) diameter outlet pipes, with a 1.5 mm (0.06 in) wall thickness, which connect to the centre silencer.

The centre silencer comprises two pressed stainless steel shells which are welded together to give a capacity of 25.2 litres (1538 in³). The silencer contains baffles and perforated tubes which reduce noise as the exhaust gasses pass through the silencer. A hanger bar is welded to the front right hand side of the silencer and provides location for a mounting rubber.

The silencer has two 55 mm (2.16 in) diameter outlet pipes, with a 1.5 mm (0.06 in) wall thickness, which are curved to pass around the rear suspension components.

Each outlet pipe terminates in a welded joint with the tail silencers. The outlet pipes have a hanger bar which provides for the location of a mounting rubber.

A hanger bar is welded to the front face of each rear silencer and provides for the location of a mounting rubber. The silencer is a rectangular fabrication with a baffle tube which is surrounded with glass fibre to provide further noise suppression. Each silencer has a capacity of 4 litres (244 in³).

The silencers each have an outlet pipe which is 60 mm (2.36 in) diameter, with a wall thickness of 1.2 mm (0.05 in). Each outlet pipe is curved downwards to direct exhaust gasses away from the rear of the vehicle.

EXHAUST MANIFOLDS

The cast exhaust manifolds are unique for each cylinder bank. Spacers on the securing bolts allow the manifolds to expand and retract with changes of temperature while maintaining the clamping loads. Heat shields are integrated into the exhaust manifold gaskets. Each manifold has a threaded port near to its outlet which allows for the fitment of the pre-catalyst HO2S.

CATALYTIC CONVERTERS

The engine management system provides accurately metered quantities of fuel to the combustion chambers to ensure the most efficient use of fuel and to minimise the exhaust emissions. A threaded boss is located on each manifold and a and another threaded boss is located between the starter and the main catalyst to house the pre and post catalyst oxygen sensors. The engine management system monitors the sensors and uses the information to further improve the fuelling and exhaust emissions.

To further reduce the carbon monoxide and hydrocarbons content of the exhaust gases, two catalytic converters are integrated into the front down pipe from each exhaust manifold. In the catalytic converter the exhaust gases are passed through honeycombed ceramic elements coated with a special surface treatment called '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 metals, which are the active constituent for converting harmful emissions into inert by-products. The metals add oxygen to the carbon monoxide and the hydrocarbons in the exhaust gases, to convert them into carbon dioxide and water respectively.

Two catalytic converters are used in each cylinder bank down pipe. A starter and main catalyst are located below the downpipe flange. The starter catalyst is monitored by two HO2S's. The main catalyst is not monitored.

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Exhaust System - V8 5.0L Petrol - 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](#) (309-00D Exhaust System - V8 5.0L 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. 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 Diagnostic Trouble Codes (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	Check the air intake system. Check for a blocked catalytic converter or muffler, install new components as necessary. Check the fuel pressure. Refer to the relevant section of the workshop manual.

DTC Index

For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.

Exhaust System - V8 5.0L Petrol - Catalytic Converter LH

Removal and Installation

Removal

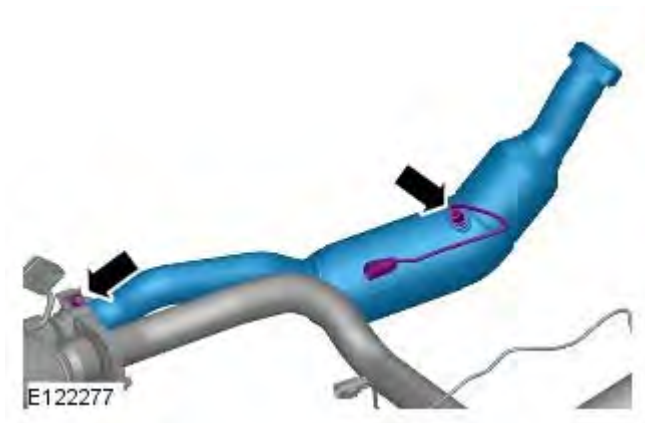
- NOTE: Removal steps in this procedure may contain installation details.

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. Refer to: [Exhaust System](#) (309-00D Exhaust System - V8 5.0L Petrol, Removal and Installation).

3. Torque: 48 Nm



Installation

1. **CAUTIONS:**



Make sure the anti-seize compound does not contact the heated oxygen sensor (HO2S) tip.



If accidentally dropped or knocked install a new sensor.



Make sure the HO2S wiring harness is not twisted more than 180 degrees and is not in contact with either the exhaust or driveshaft.

- NOTE: If the original sensor is to be installed, apply lubricant meeting specification ESE-M12A4-A to the thread of the sensor.

To install, reverse the removal procedure.

Exhaust System - V8 5.0L Petrol - Catalytic Converter RH

Removal and Installation

Removal

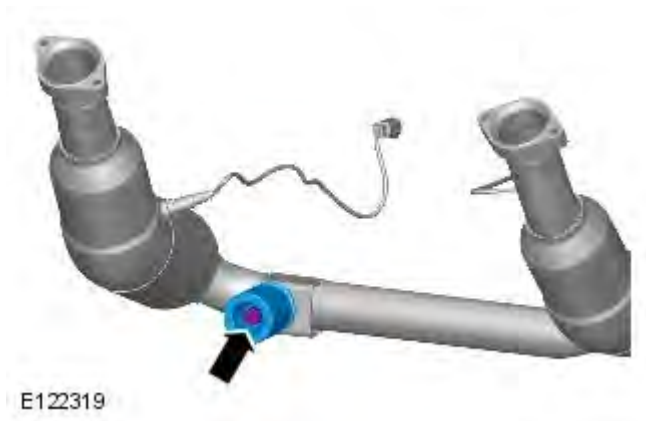
- NOTE: Removal steps in this procedure may contain installation details.

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

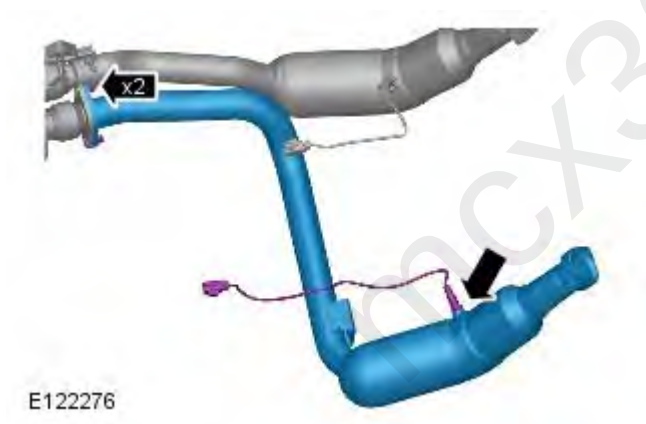
Raise and support the vehicle.

2. Refer to: [Exhaust System](#) (309-00D Exhaust System - V8 5.0L Petrol, Removal and Installation).

3. Torque: 22 Nm



4. Torque: 48 Nm



Installation

1. **CAUTIONS:**



Make sure the anti-seize compound does not contact the heated oxygen sensor (HO2S) tip.



If accidentally dropped or knocked install a new sensor.



Make sure the HO2S wiring harness is not twisted more than 180 degrees and is not in contact with either the exhaust or driveshaft.

- NOTE: If the original sensor is to be installed, apply lubricant meeting specification ESE-M12A4-A to the thread of the sensor.

To install, reverse the removal procedure.

Exhaust System - V8 5.0L Petrol - Exhaust System

Removal and Installation

General Equipment

Transmission jack

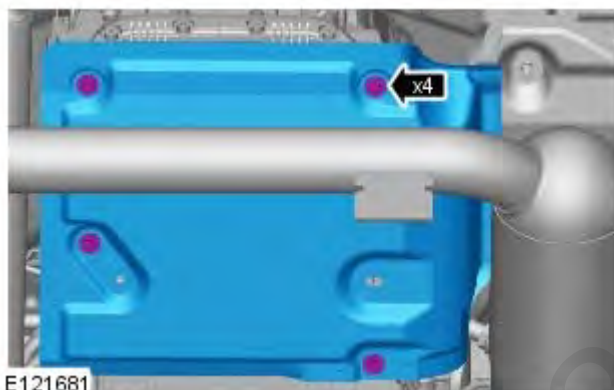
Removal

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.

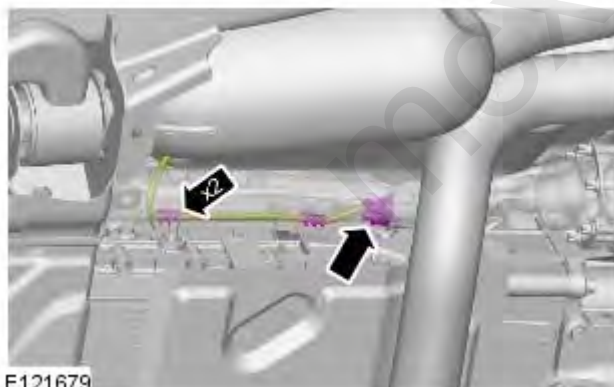
2. Refer to: [Engine Undershield](#) (501-02 Front End Body Panels, Removal and Installation).
3. Refer to: [Transmission Support Crossmember - V8 5.0L Petrol](#) (502-02 Full Frame and Body Mounting, Removal and Installation).

4. Torque: 10 Nm



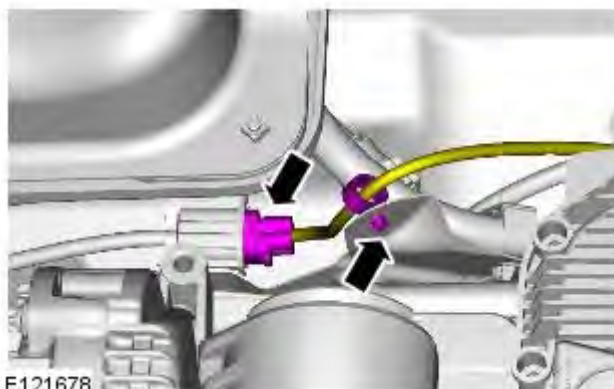
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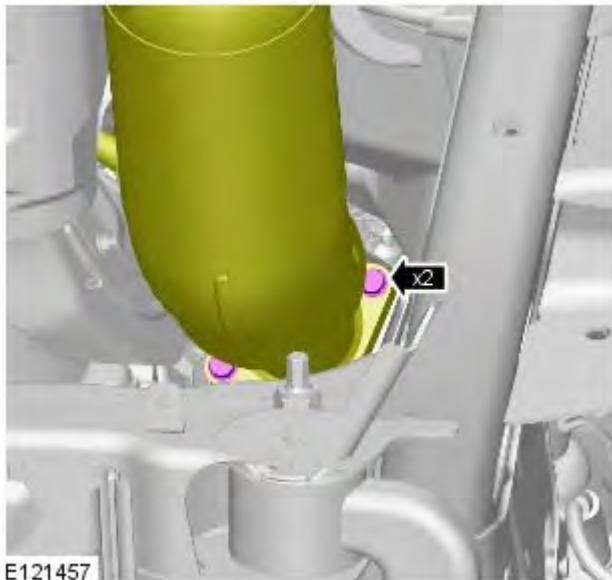


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- 6.



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8. **8.** NOTE: Right-hand shown, left-hand similar.

Torque: 22 Nm



9. **9.**  CAUTION: Make sure that the exhaust system is supported with suitable retaining straps.

With assistance, remove the exhaust system.

General Equipment: [Transmission jack](#)



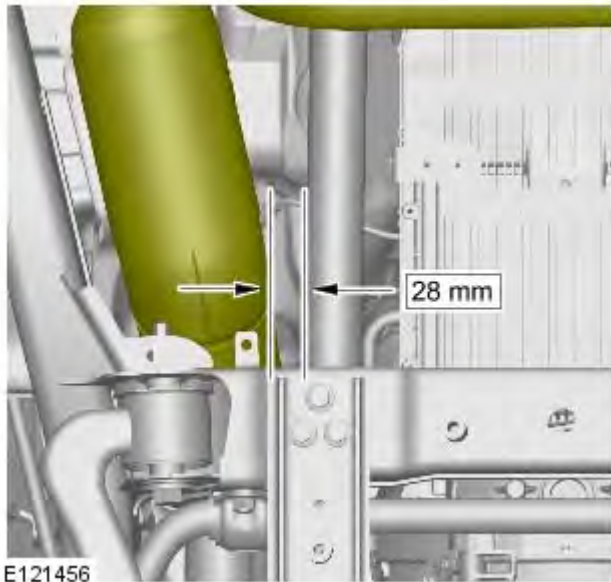
10. **10.** NOTE: Do not disassemble further if the component is removed for access only.

• NOTE: Some variation in the illustrations may occur, but the essential information is always correct.

Torque: 45 Nm

Installation

1. To install, reverse the removal procedure.



2.  CAUTION: Make sure there is a clearance (A) of 25 mm to 30 mm between the closest points of the LH catalytic converter and the front driveshaft.

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Exhaust System - V8 5.0L Petrol - Front Muffler

Removal and Installation

Special Tool(s)

 E45589	100-051 Cutter, Exhaust Pipe
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General Equipment

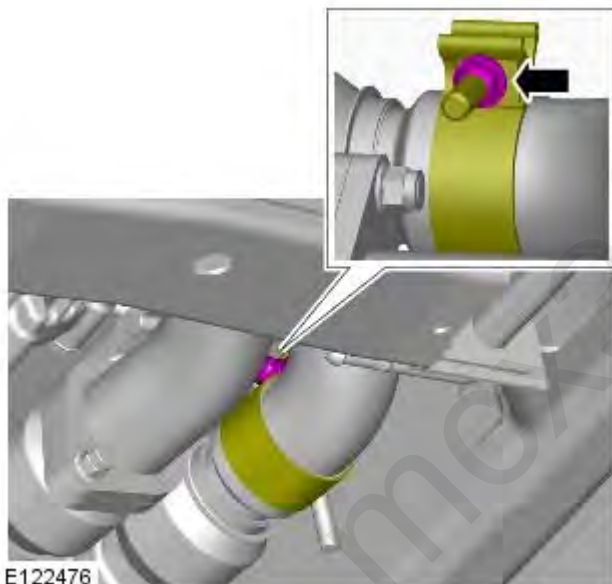
Transmission jack

Removal

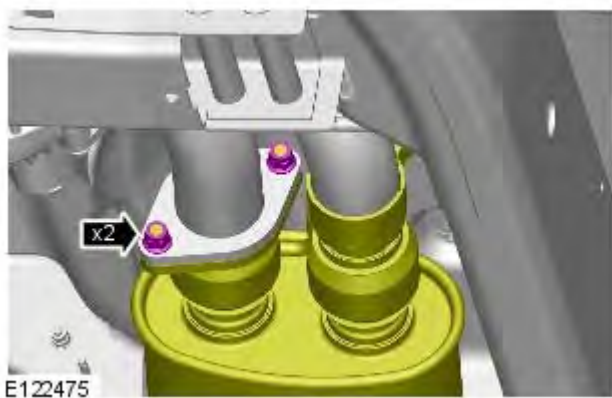
1.  **WARNING:** Make sure to support the vehicle with axle stands.

Raise and support the vehicle.

2.



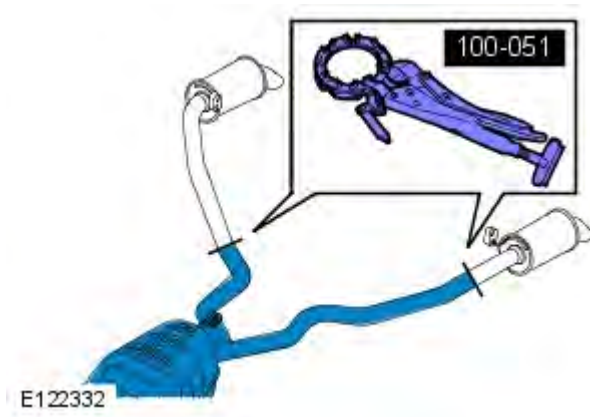
3. Discard the gasket.





4. With assistance, remove the muffler assembly.

General Equipment: [Transmission jack](#)



5. Using the special tool, cut the exhaust pipe at the marked position.

Special Tool(s): [100-051](#)

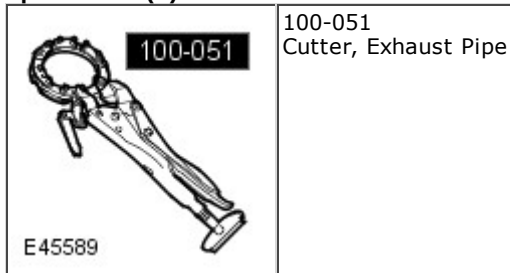
Installation

1. **1. NOTE: Do not tighten the retaining clamp at this stage.**
Position the RH tail pipe to the muffler assembly.
2. **2. NOTE: Do not tighten the retaining clamp at this stage.**
Position the LH tail pipe to the muffler assembly.
3. **3. NOTE: Install a new gasket.**
With assistance, install the muffler assembly.
4. Align both tail pipes and tighten the retaining clamps to 55 Nm (40 lb.ft).
5. Tighten the catalytic converter nuts and clamp to 48 Nm (35 lb.ft).

Exhaust System - V8 5.0L Petrol - Rear Muffler

Removal and Installation

Special Tool(s)

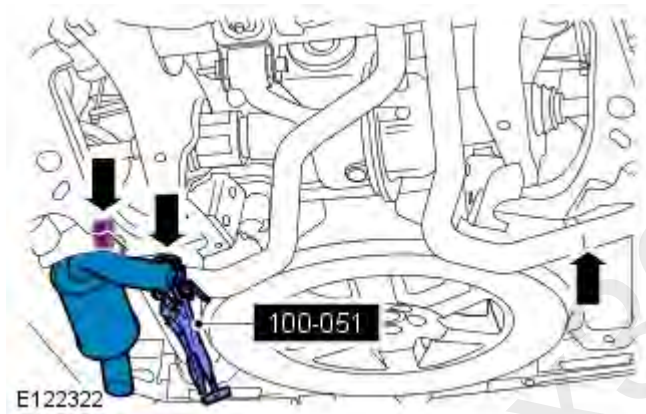


Removal

- NOTE: Removal steps in this procedure may contain installation details.

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. **NOTE:** Right-hand shown, left-hand similar.

- NOTE: Using the special tool, cut the exhaust pipe at the marked position.

Remove the tail pipe.

Special Tool(s): [100-051](#)

Installation

1. **NOTE:** Do not tighten the retaining clamp at this stage.

- NOTE: Clean the components.
- NOTE: Install the retaining clamp.

Install the tail pipe.

2. Align the tail pipe and tighten the retaining clamp to 55 Nm (40 lb.ft).