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2020.0 DEFENDER (LE), 309-00C

EXHAUST SYSTEM - INGENIUM I6 3.0L PETROL (G2342512)

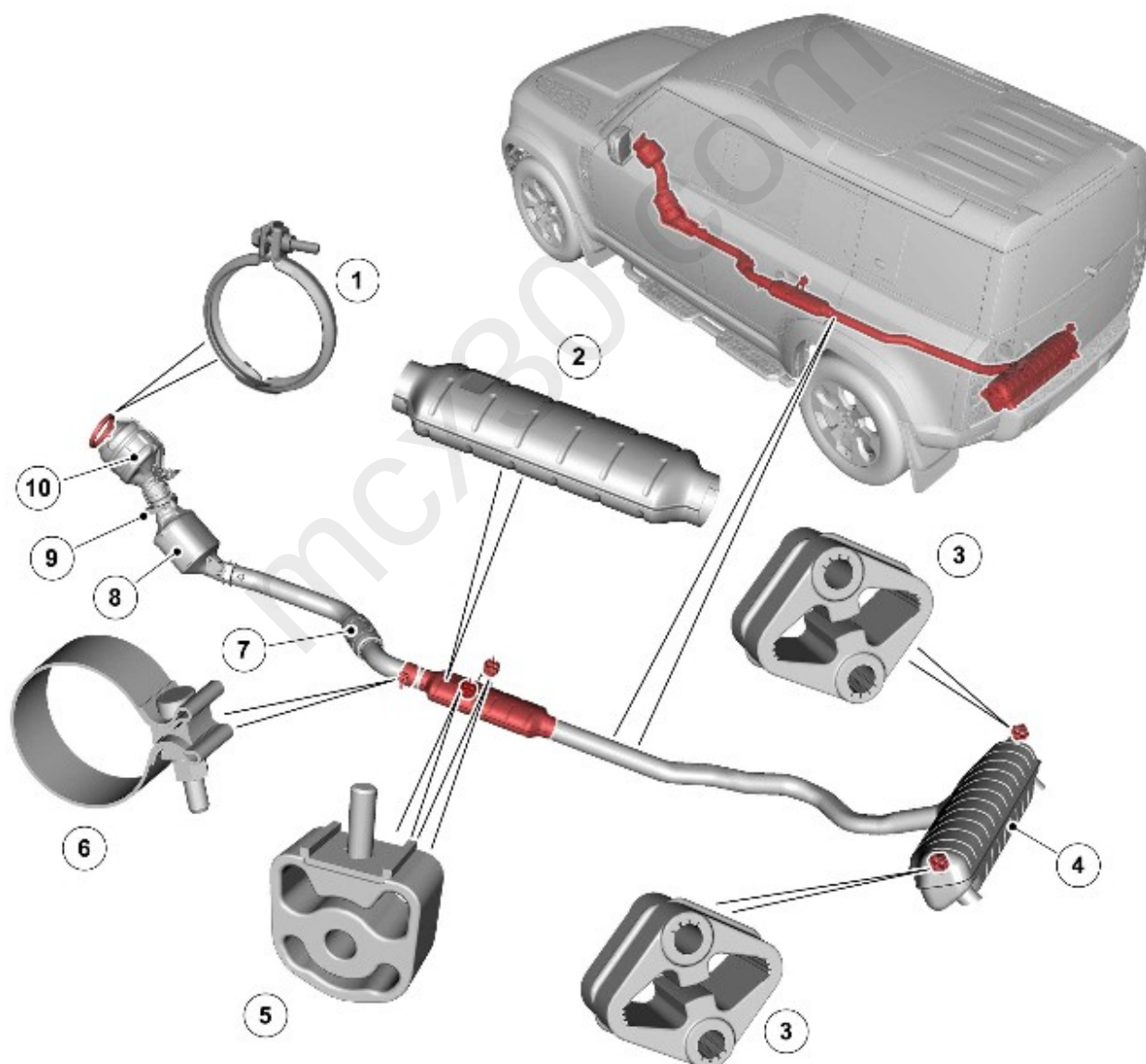
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COMPONENT LOCATION

COMPONENT LOCATION - 1 OF 1

 NOTE:

Vehicle with 5 doors is shown, Vehicle with 3 doors is similar.



ITEM	DESCRIPTION
1	Ring flange to turbocharger
2	Resonator
3	Mounting rubber (quantity 2)
4	Rear silencer
5	Mounting rubber (quantity 2)
6	Clamp
7	Flexible coupling
8	Main catalytic converter or Main catalytic converter/ Gasoline Particulate Filter (GPF)
9	Flange joint
10	Pre catalytic converter

OVERVIEW

The Ingenium I6 3.0L petrol exhaust system is manufactured from stainless steel. The exhaust system locates to the underside of the vehicle body with mounting rubbers. The mounting rubbers locate on hanger brackets that are welded to the exhaust system. The mounting rubbers locate on adjacent hanger brackets which are bolted to the underside of the vehicle body.

There are 2 variants that are available on the Ingenium I6 3.0L petrol exhaust system:

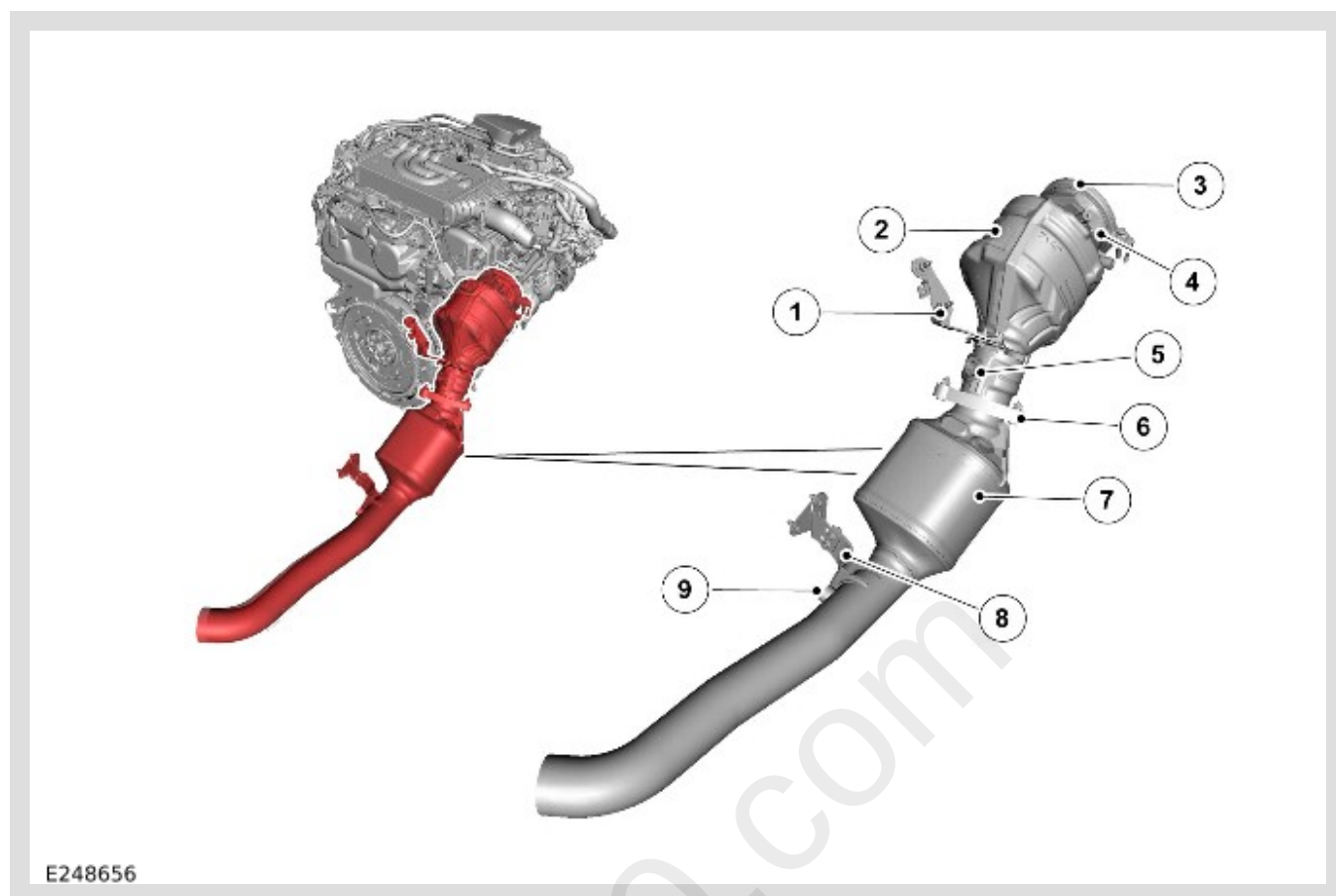
- Vehicle without GPF
- Vehicle with GPF.

DESCRIPTION

The Ingenium I6 3.0L petrol exhaust system comprises 3 separate sections:

- An exhaust front section
- An exhaust center section
- An exhaust rear section.

EXHAUST FRONT SECTION - VEHICLES WITHOUT GASOLINE PARTICULATE FILTER



ITEM	DESCRIPTION
1	Support bracket
2	Pre catalytic converter
3	Ring flange to turbocharger
4	Threaded hole - Pre catalyst Heated Oxygen Sensor (HO2S)
5	Threaded hole - Mid catalyst HO2S
6	Flange joint
7	Main catalytic converter
8	Support bracket
9	Threaded hole - Post catalyst HO2S

The exhaust front section comprises pre and main catalytic converter. The catalytic converter is an emissions control device that converts toxic gases and pollutants in the exhaust gas to less toxic pollutants.

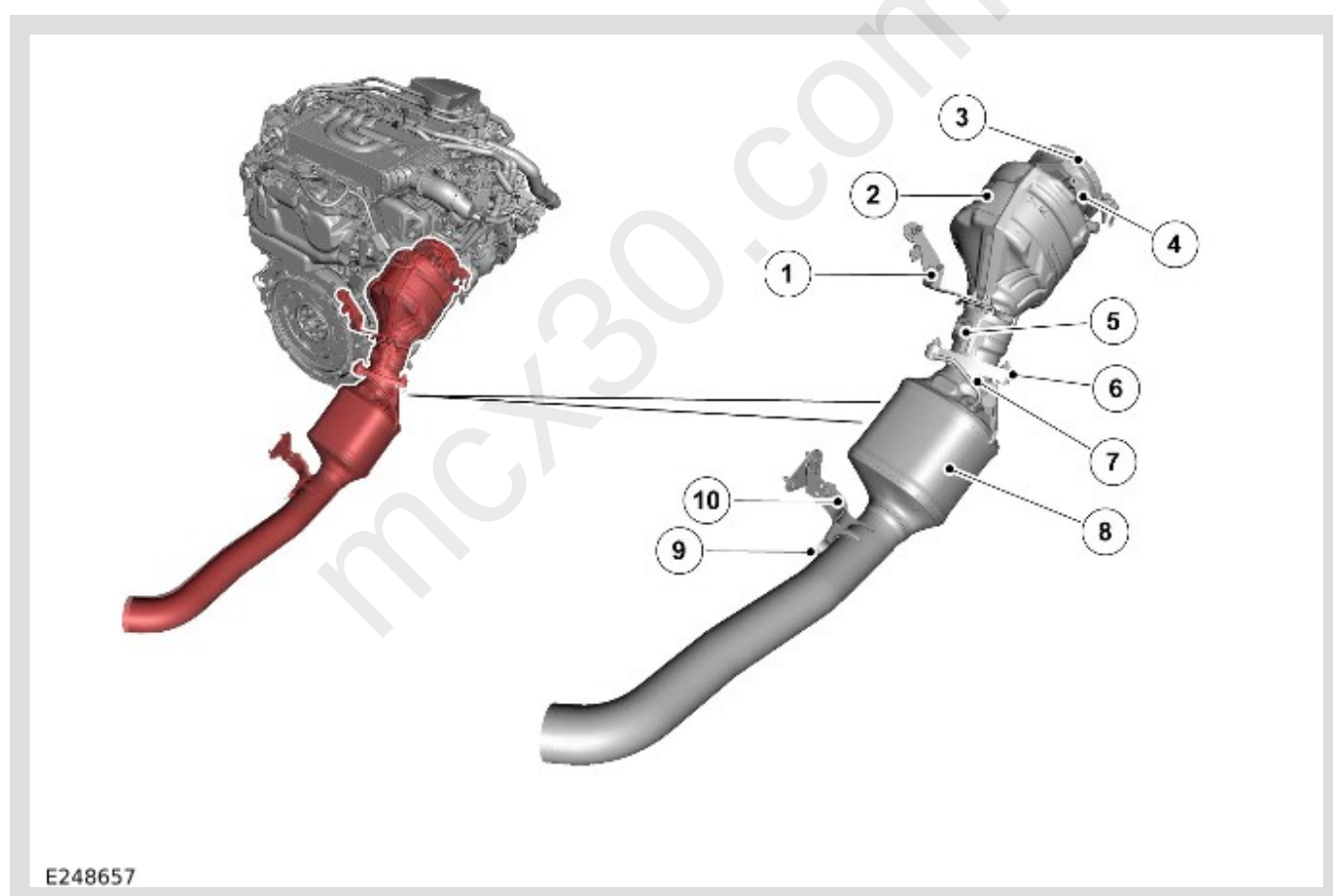
The pre catalytic converter has 2 welded pipes. The inlet welded pipe is flared into a flat face flange that connects to the turbocharger outlet. The inlet pipe of the pre catalyst is connected to the turbocharger housing by a ring clamp and mica seal. Immediately after the flange the pipe contains a threaded hole for the installation of the pre catalyst Heated HO2S. The mid catalyst HO2S is located between the pre and the main catalytic converter.

The outlet welded pipe of the pre catalytic converter connects with main catalytic converter using a flange and a gasket. The main catalytic converter is secured to the transmission by a bracket. After the main catalytic converter, there is a threaded hole for the installation of the post catalyst HO2S.

The pre, mid and post catalyst HO2S monitors the exhaust gases leaving the engine. The Powertrain Control Module (PCM) uses the information from the HO2S to provide accurately measured quantities of fuel to the combustion chambers. The PCM uses the information from the HO2S to minimize the exhaust emissions.

For additional information, refer to: [Electronic Engine Controls](#) (303-14B Electronic Engine Controls - INGENIUM I6 3.0 L Petrol, Description and Operation).

EXHAUST FRONT SECTION - VEHICLES WITH GASOLINE PARTICULATE FILTER



ITEM	DESCRIPTION
1	Support bracket
2	Pre catalytic converter
3	Ring flange to turbocharger

ITEM	DESCRIPTION
4	Threaded hole - Pre catalyst HO2S
5	Threaded hole - Mid catalyst HO2S
6	Flange joint
7	Pressure pipe - Exhaust back pressure sensor
8	Main catalytic converter/ GPF
9	Threaded hole - Post catalyst HO2S
10	Support bracket

On vehicles equipped with a GPF, the exhaust front section comprises of a pre catalytic converter and the main catalytic converter/ GPF. The catalytic converter converts toxic gases and pollutants in exhaust gas to less toxic pollutants.

The catalytic converter has a welded pipe with a flange which is flared into a flat face flange. The flange mates with the outlet of the turbocharger. The flange is sealed with a mica gasket to the turbocharger and secured with a clamp onto the turbocharger housing. Immediately after the clamp the pipe contains a threaded hole for the installation of the pre catalyst Heated HO2S. The mid catalyst HO2S is located between the pre catalytic converter and the main catalytic converter/ GPF. The post catalyst HO2S is installed into the exhaust system after the main catalytic converter/ GPF.

The GPF traps the particulate matter in the exhaust gas that the direct injection combustion process produces.

A pressure pipe for the exhaust back pressure sensor is located between the mid catalyst HO2S and the main catalytic converter/ GPF. The exhaust back pressure sensor measures the exhaust gas pressure upstream of the main catalytic converter/ GPF and transmits the information to the PCM. The exhaust gas back pressure information is used by the PCM to calculate soot load in the main catalytic converter/ GPF. When an increased level of back pressure is identified, the PCM begins regeneration of the GPF.

For additional information, refer to: [Gasoline Particulate Filter](#) (309-00C Exhaust System - INGENIUM I6 3.0L Petrol, Description and Operation).

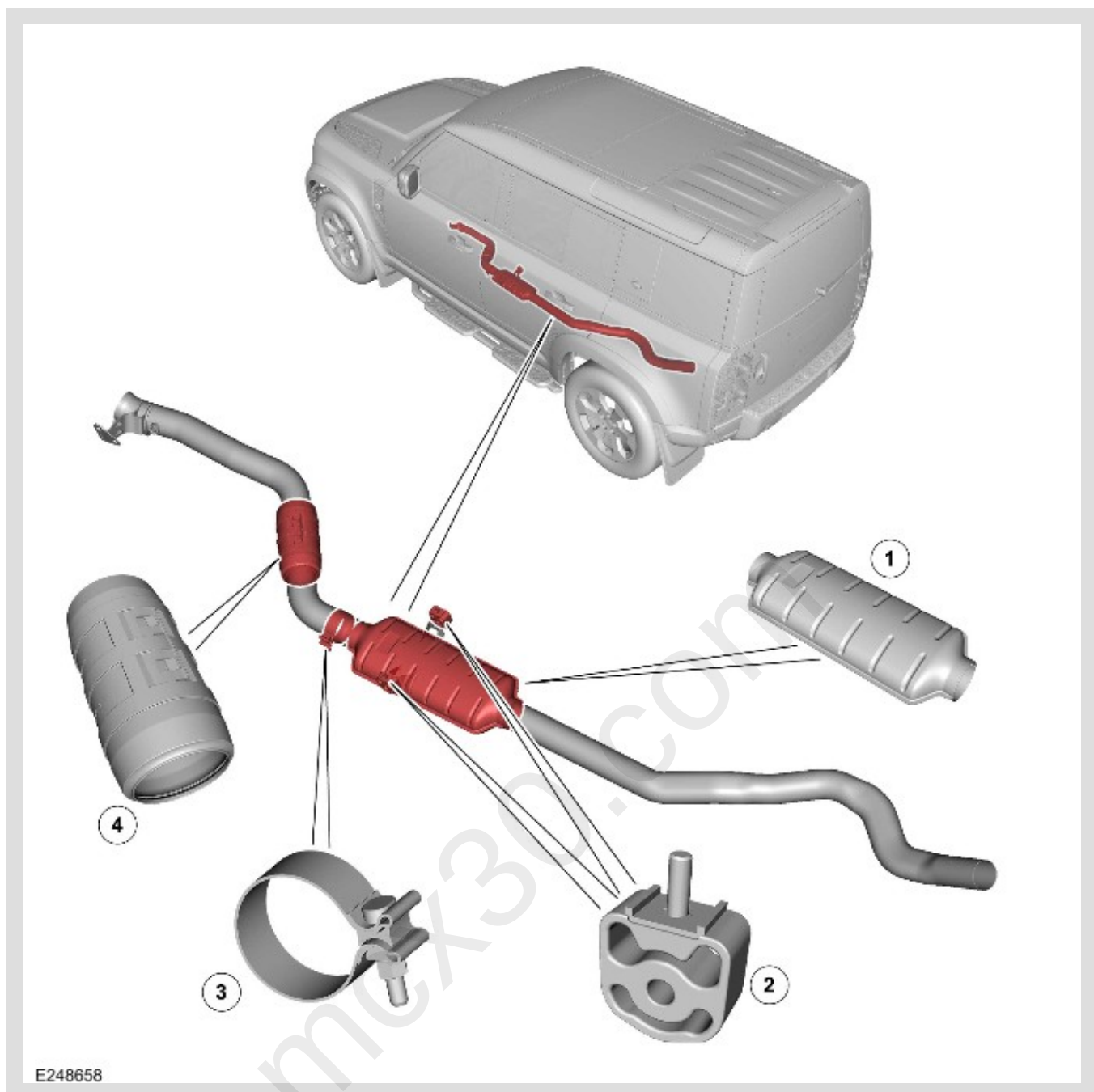
For additional information, refer to: [Electronic Engine Controls](#) (303-14B Electronic Engine Controls - INGENIUM I6 3.0 L Petrol, Description and Operation).

EXHAUST CENTER SECTION



NOTE:

Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



ITEM	DESCRIPTION
1	Resonator
2	Mounting rubber (quantity 2)
3	Clamp
4	Flexible coupling

The exhaust center section comprises of 1 inlet and 1 outlet pipe, which incorporate a flexible coupling and a resonator.

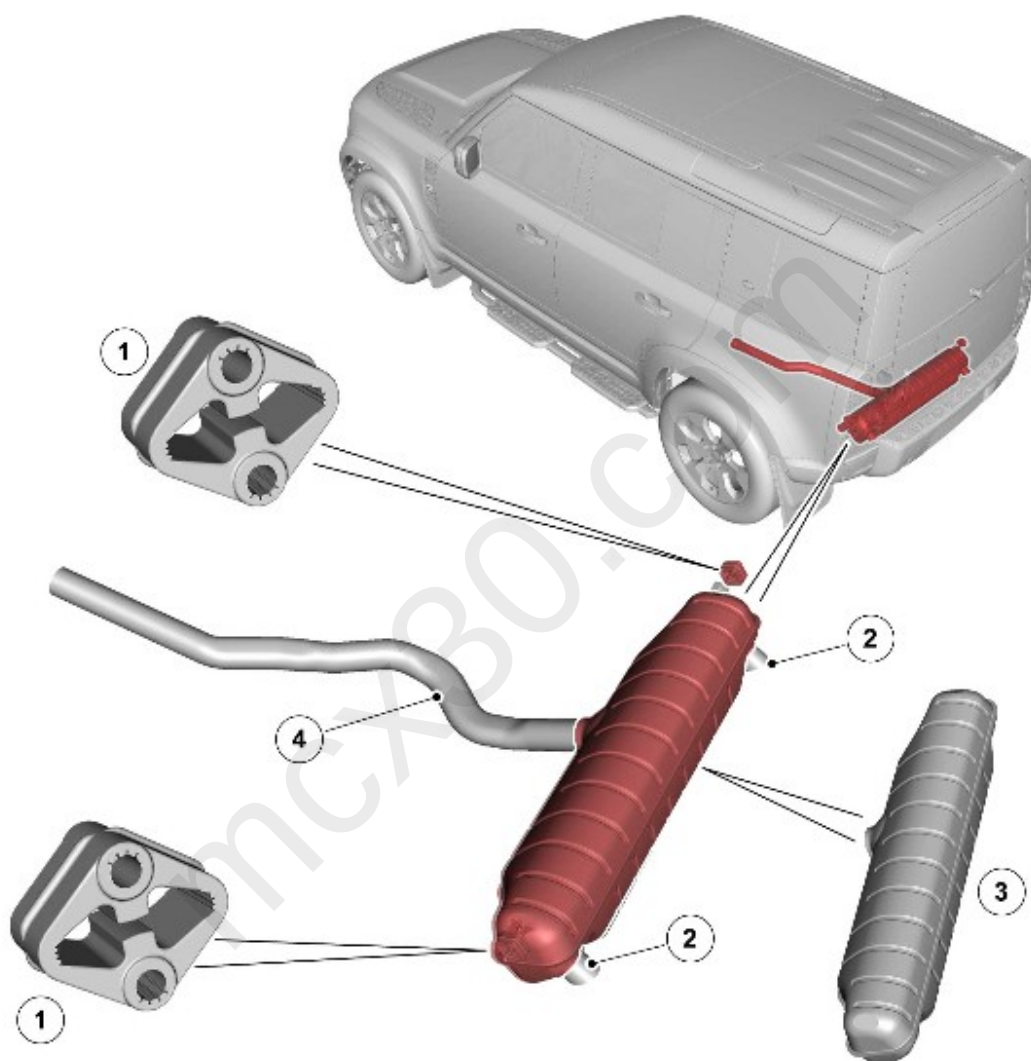
The inlet pipe of the exhaust center section is secured to the exhaust front section outlet pipe by welding.

The exhaust center section is attached to the underside of the body with 2 mounting rubbers. The mounting rubbers attach to hanger brackets that are welded to the system. The mounting rubbers locate on corresponding hanger brackets which are bolted to the underside of the vehicle body.

EXHAUST REAR SECTION

NOTE:

Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



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ITEM	DESCRIPTION
1	Mounting rubber (quantity 2)
2	Exhaust pipe (quantity 2)

ITEM	DESCRIPTION
3	Rear silencer
4	Inlet pipe

The rear exhaust section has 1 silencer assembly with 1 inlet and 2 outlet pipes welded to the silencer. The exhaust gases are expelled from rear silencer through 2 outlet pipe. The outlet pipe direct exhaust gases away from the rear of the vehicle.

The rear exhaust section is supported by 2 mounting rubbers. The mounting rubbers are attached to 2 hanger brackets bolted to the underside of the vehicle body.

In production, the resonator and the rear silencer are installed as one component. In service, the rear silencer can be replaced independently.

OPERATION

CATALYTIC CONVERTER

The catalytic converter reduces the carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) content of the exhaust gases. In the catalytic converter the exhaust gases pass through honeycombed ceramic elements whose surface is treated with a special deposit of washcoat containing catalytic elements. The washcoat also increases the surface area of the ceramic elements by a factor of approximately 7,000.

The palladium and rhodium are on the surface of the washcoat. The palladium facilitates the oxidation of HC and CO to form water vapor (H₂O) and carbon dioxide (CO₂). The rhodium facilitates the reduction of the NOx into molecular Nitrogen (N₂) by extraction of the O₂ from the NOx molecules. The chemical process of Oxidation of CO, HC and reduction of NOx occurs according to the level of oxygen in the exhaust flow. Maximum efficiency (best CO /hydrocarbons oxidation, best NOx reduction) occurs at Lambda 1.

For additional information, refer to: [Electronic Engine Controls](#) (303-14B Electronic Engine Controls - INGENIUM I6 3.0 L Petrol, Description and Operation).

GASOLINE PARTICULATE FILTER

The GPF system reduces particulate matter emissions to levels sufficient to meet current emission standards. The GPF consists of a stainless steel housing which contains a synthetic cordierite based ceramic filter. The ceramic filter has a catalytic coating and is able to withstand the very high operating temperatures required for regeneration.

For additional information, refer to: [Gasoline Particulate Filter](#) (309-00C Exhaust System - INGENIUM I6 3.0L Petrol, Description and Operation).