SECTION : 309-00 Exhaust System

VEHICLE APPLICATION : 2008.0 Falcon

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SPECIFICATIONS

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Description	Nm
Catalyst assembly inlet pipe to manifold nuts.	25 Nm
Catalyst assembly outlet pipe to intermediate muffler assembly inlet pipe bolts.	35 Nm
Intermediate muffler outlet pipe to rear muffler inlet pipe nuts.	35 Nm

8 Cylinder Torque Specifications

Description	Nm
Catalyst assembly inlet pipes to manifold nuts (LHS & RHS).	25 Nm
Catalyst assembly outlet pipes to intermediate muffler assembly inlet pipe nuts.	35 Nm
Intermediate muffler outlet pipe to rear muffler inlet pipe nuts.	35 Nm
HEGO sensor to catalyst assembly inlet pipe (LHS only).	47.5 Nm

DESCRIPTION AND OPERATION

Exhaust System

The exhaust system provides an exit for exhaust gases and reduces engine noise by passing exhaust gases through the three way catalytic converter (TWC), an intermediate muffler forward of the rear axle and a rear muffler. Rubber exhaust hanger insulators attach the exhaust system to the hanger brackets.

CAUTION: Under no circumstances should non "Original Equipment" exhausts be fitted.

Three Way Catalytic Converter (TWC)

The three way catalytic converter (TWC) plays a major role in the emission control system. The TWC operates as a gas reactor. Its catalytic function is to speed the heat-producing chemical reaction of components in the exhaust gases in order to reduce air pollutants.

Precautions

WARNING: The normal operating temperature of the exhaust system is very high. Never work around or attempt to repair any part of the exhaust system until it has cooled. Use special care when working around the TWC. The TWC heats to a high temperature after only a short period of engine operation. Failure to follow these instructions may result in personal injury.

WARNING: Exhaust gases contain carbon monoxide which can be harmful to health and are potentially lethal. Exhaust system leaks should be repaired immediately. Never operate the engine in enclosed areas. Failure to follow these instructions may result in personal injury.

CAUTION: Do not use leaded fuel in a vehicle equipped with a TWC.

CAUTION: In a vehicle that is continually misfueled, the lead in the fuel will be deposited in the TWC and completely blanket the catalyst. Lead reacts with platinum to "poison" the catalyst. Continuous use of leaded fuel can destroy the catalyst and render the TWC useless.

CAUTION: The addition of lead to the TWC can also solidify the catalyst, causing excessive back pressure in the exhaust system and possibly causing engine damage.

CAUTION: Extremely high temperatures of 1,100°C (2,012°F) or above due to misfiring or an over-rich fuel/air mixture will cause the ceramic base to sinter or burn, destroying the TWC.

The TWC is designed to provide a long life. No maintenance is necessary for the TWC. Avoid the following conditions:

- Driving with a misfiring engine
- Continuously running the engine with a misfiring spark plug.
- Parking or stopping the vehicle over combustible material such as dry grass. The material can be ignited by the high temperatures of the TWC and the muffler.

Heat Shields

Exhaust system heat shields attached to the underbody protect the vehicle from exhaust system heat and should be inspected at regular intervals to ensure they are not dented or out of position. If a shield is damaged or shows evidence of deterioration, it should be replaced. The shields for the intermediate muffler, over-axle pipe, and rear muffler are installed separately.

DIAGNOSIS AND TESTING

Exhaust System

This section covers general exhaust system diagnosis, tests, adjustment and repair procedures. For exhaust system component removal, disassembly, assembly, installation, clearances, torque requirements, and bracket locations refer to the illustrations in removal and installation section.

Inspection and Verification

Inspect the inlet pipe, outlet pipe, and muffler for cracked joints, broken welds and corrosion damage (holes) that would result in a leaking exhaust system. Inspect the clamps, brackets and insulators for cracks and stripped or badly corroded bolt threads.

Pinpoint Tests

Engine performance

An exhaust system performance complaint, such as excessive back pressure is usually noticeable by its effect on engine performance. For diagnosis of exhaust system problems that affect engine performances, refer to section Section 303-00, Section 303-01A, Section 303-01B, Section 303-01C(engine diagnosis and testing).

Leaks

External leaks in the exhaust system are often accompanied by noises or exhaust gas emitted from under the vehicle. A visual inspection of the exhaust system usually will show the location of the leak. Look for holes, ruptured joints and corroded areas in the muffler, inlet pipe and outlet pipe. Examine joints and connections for deposits that would be caused by exhaust gas leakage.

Noise/Vibration

A misaligned exhaust system is usually indicated by vibration, grounding, rattling, or binding of the components. Often the associated noise is hard to distinguish from other chassis noises. Use a rubber mallet to lightly tap on exhaust components and heat shields to identify noise and vibration areas. It is important that exhaust clearances and setting procedures as shown in illustrations in **removal and installation** section be adhered to whenever repairs involving the exhaust system are carried out. Inspect exhaust system welds, insulators and insulator brackets for cracks or breaks. Shake the exhaust system to identify any exhaust-to-body/chassis contact. Ensure that the insulators are in a neutral position when the exhaust system is hot, before replacing components in an endeavor to correct a noise, vibration or harshness problem.

GENERAL PROCEDURES

Exhaust System Alignment

NOTE: The exhaust system must be free of leaks, binds, grounding and excessive vibration.

Exhaust system vibration, grounding or binds are usually caused by: loose, broken insulators or brackets or improperly connected pipes. Any of the aforementioned conditions may cause changes to clearances of the exhaust system components. If any of these conditions exist, the exhaust system components must be checked, adjusted or replaced to make certain the specified clearances (refer to the illustrations in removal and installation section) are maintained.

Perform the following procedures to adjust the exhaust system components:

1. Loosen the securing hardware, and the pipe support brackets.
2. Progressively align the exhaust system, using the relative lateral position of the hanger brackets (exhaust/body mounted) and rubber isolators as a guide.
   NOTE: Exhaust hangers are designed to be under a small amount of tension when the exhaust system is cold. This allows for thermal expansion of the system during normal operation.
3. Tighten all attachments.
   NOTE: Tighten the exhaust manifold nuts evenly and alternately.
4. Start the engine and check the exhaust system for leaks.
   NOTE: Mufflers, inlet pipes and outlet pipes, gaskets, brackets, and insulators should be replaced if they are defective or become badly corroded. Do not attempt to repair these parts.

REMOVAL AND INSTALLATION

All Rear Muffler Assemblies

Removal and Installation

WARNING: Care must be taken so as to avoid damage to exhaust system & fuel tank heat shields. If shields are damaged or substantially distorted they should be replaced, and the fuel tank inspected for damage.

1. Remove the nuts connecting the intermediate muffler assembly to the rear muffler assembly. Discard the gasket.
2. Disconnect rear muffler assembly from the hangers at the front and rear of the muffler and remove by pushing muffler rearward and gently moving 'over-axle pipe' through cavity above IRS (sedan only).
   NOTE: For XR6 Turbo and XR8 Sedans it will be necessary to remove the IRS assembly from the vehicle in order to remove the tailpipe assembly. Refer to Section 204-02A.
3. Installation is the reverse of the removal procedure.
   NOTE: Install new gaskets at each point.

   NOTE: Assembly is the reverse of the removal procedure. To ease reattachment of rubber isolators to hanger brackets, a mild detergent solution can be applied to the bracket.

   NOTE: If the IRS assembly has been removed to remove exhaust tailpipe from XR6 Turbo or XR8 Sedans, the rear wheels must be re-aligned. For more information refer to section 204-00.

   NOTE: Care must be taken when attaching a catalyst assembly to a manifold such that it is correctly aligned. To achieve this, firstly do up the nuts by hand as far as possible (using a socket with extension), and then torque the nuts up in steps alternating between the two until the nominal torque is achieved.

   NOTE: Upon conclusion of assembly, system should be checked for leaks and correct alignment, refer Sections on Diagnosis and Testing and General Procedures.

All Intermediate Muffler Assemblies

Removal and Installation

1. Remove bolts connecting intermediate muffler to catalyst assembly. Discard the gasket.
   NOTE: The bolts connecting the intermediate muffler to the catalyst assemblies are of a self-threading type that have been used to tap thread directly into the catalyst assembly outlet pipe flange. Conventional class 10.0 bolts with similar geometry can be used in place of these self-threading bolts.
2. Remove the nuts connecting the intermediate muffler assembly to the rear muffler assembly. Discard the gasket.
3. Disconnect intermediate muffler assembly from the hanger on the outlet pipe and remove.
4. Installation is the reverse of the removal procedure.

6 Cylinder Catalyst Assembly

Removal and Installation

1. Remove nuts connecting catalyst assembly to manifold.
   NOTE: Manifold studs and mating exhaust nuts are one time use parts only and must be replaced.
2. Remove bolts connecting intermediate muffler to catalyst assembly. Discard the gasket.
   NOTE: The bolts connecting the intermediate muffler to the catalyst assembly are of a self-threading type that have been used to tap thread directly into the catalyst assembly outlet pipe flange. Conventional class 10.0 bolts with similar geometry can be used in place of these self-threading bolts.
3. Disconnect the catalyst assembly from the hanger on the outlet pipe and remove.
4. Installation is the reverse of the removal procedure.
   NOTE: Care must be taken when attaching a catalyst assembly to a manifold such that it is correctly aligned. To achieve this, firstly do up the nuts by hand as far as possible (using a socket with extension), and then torque the nuts up in steps alternating between the two until the nominal torque is achieved.

REMOVAL AND INSTALLATION (Continued)

8 Cylinder Catalyst Assemblies (LHS & RHS)

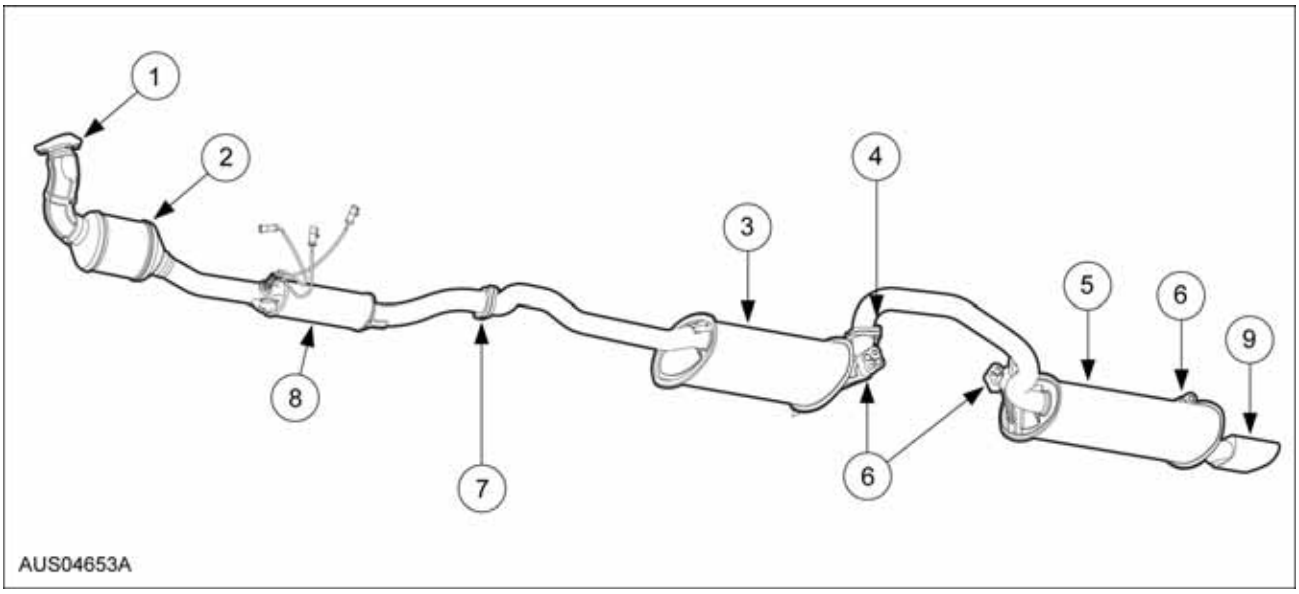
Removal and Installation

1. Remove nuts connecting catalyst assembly to manifold. Both sides will require the removal of an additional nut retaining a heat shield.
   NOTE: Manifold studs and mating exhaust nuts are one time use parts only and must be replaced.
2. Remove nuts connecting intermediate muffler to catalyst assembly. Discard the gasket(s).
3. Installation is the reverse of the removal procedure.
   NOTE: Care must be taken when attaching a catalyst assembly to a manifold such that it is correctly aligned. To achieve this, firstly do up the nuts by hand as far as possible (using a socket with extension), and then torque the nuts up in steps alternating between the two until the nominal torque is achieved.

REMOVAL AND INSTALLATION (Continued)

System Diagrams

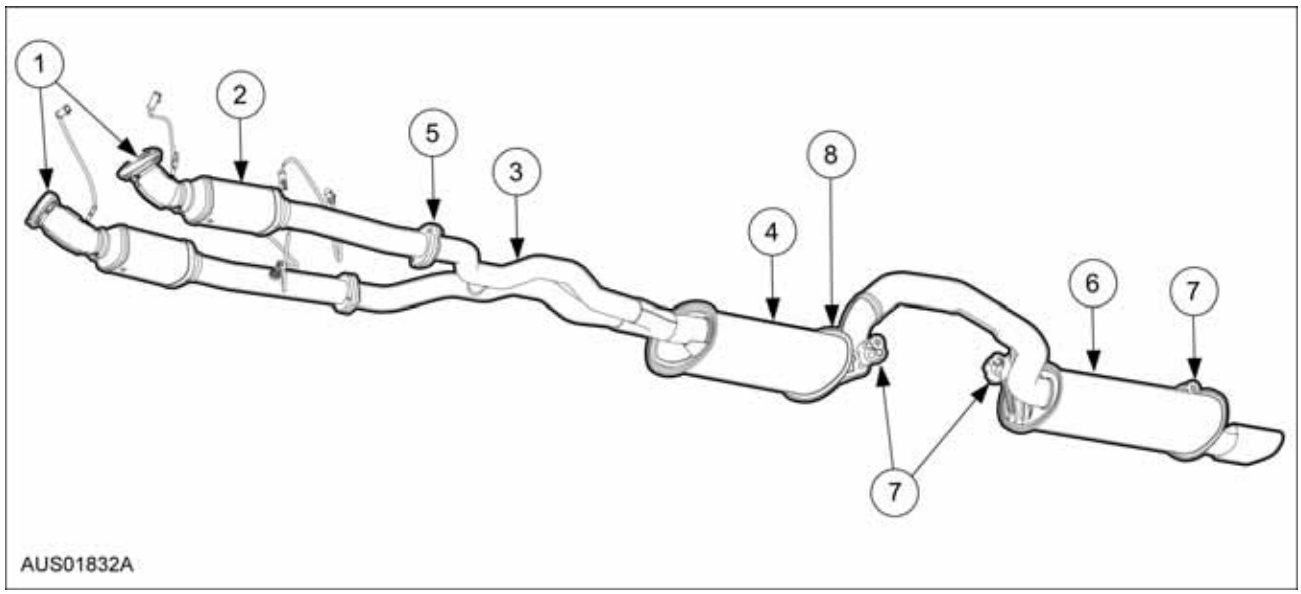
Sedan - 6 cylinder (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Intermediate muffler assembly
4	Nut Assembly
5	Rear muffler assembly
6	Rubber exhaust hanger insulators
7	Nut assembly
8	Resonator
9	Chrome tip (XR6 only)

REMOVAL AND INSTALLATION (Continued)

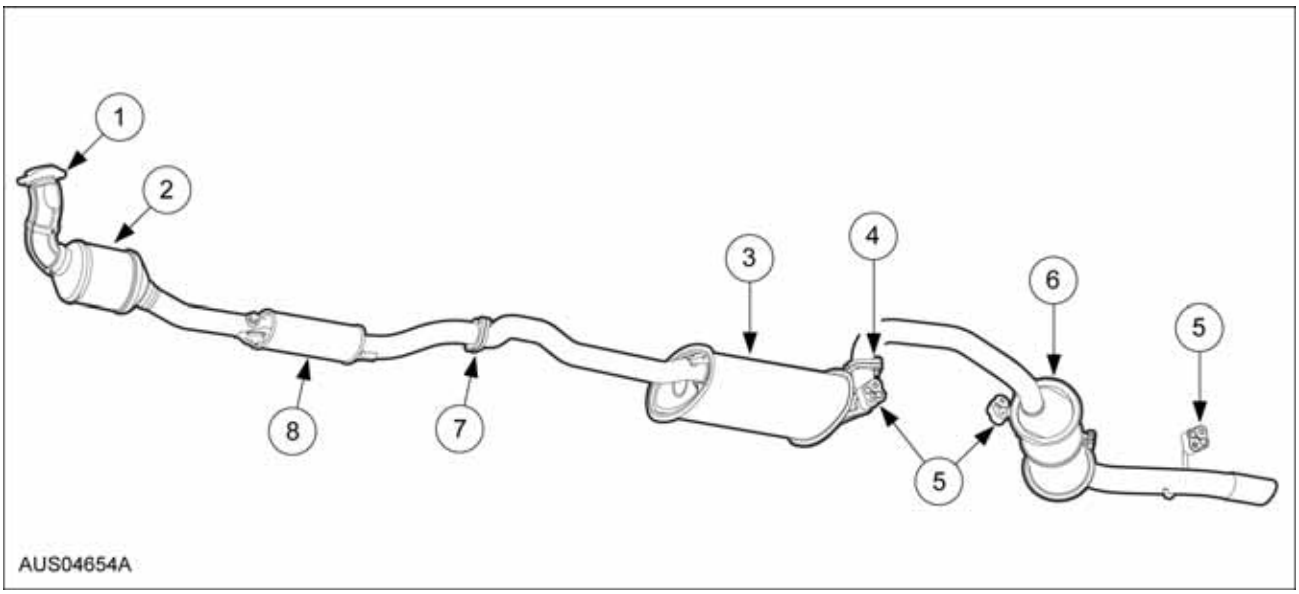
Sedan - 8 cylinder (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Two-way adapter
4	Intermediate muffler assembly
5	Nut Assembly
6	Rear muffler assembly
7	Rubber exhaust hanger insulators
8	Nut assembly

REMOVAL AND INSTALLATION (Continued)

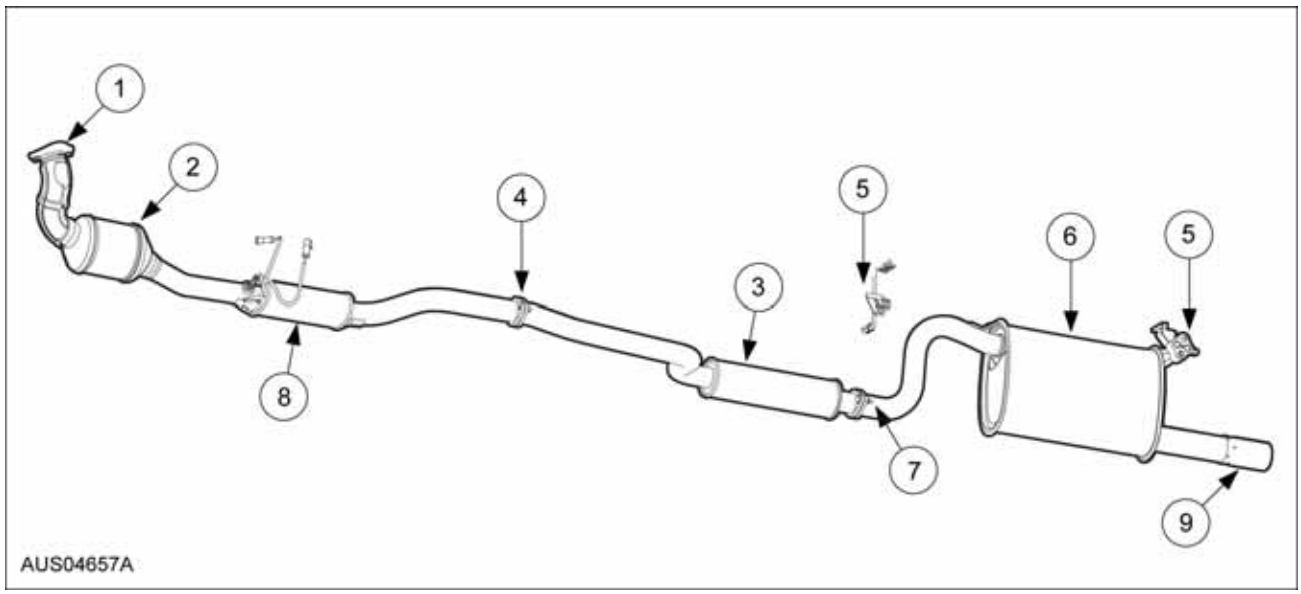
Sedan - 6 cylinder (SFLPG)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Intermediate muffler assembly
4	Nut Assembly
5	Rubber exhaust hanger insulators
6	Rear Muffler Assembly
7	Nut assembly
8	Resonator

REMOVAL AND INSTALLATION (Continued)

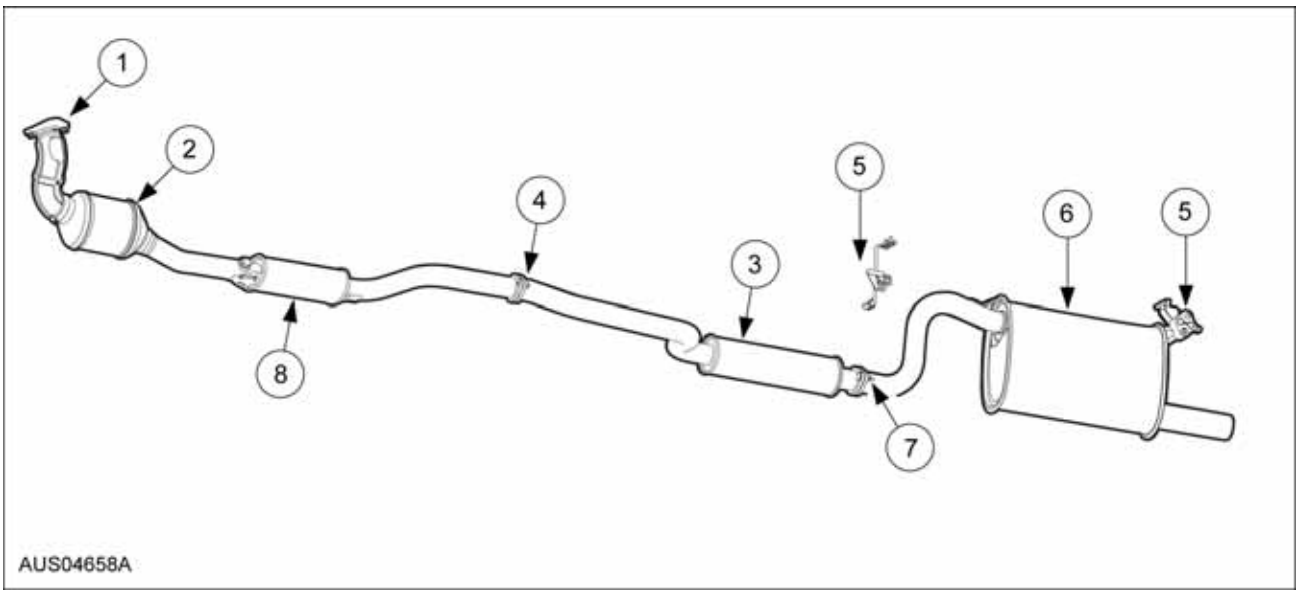
Ute - 6 cylinder (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Intermediate muffler assembly
4	Nut Assembly
5	Rubber exhaust hanger insulators
6	Rear muffler assembly
7	Nut assembly
8	Resonator
9	Chrome tip (XR6 only)

REMOVAL AND INSTALLATION (Continued)

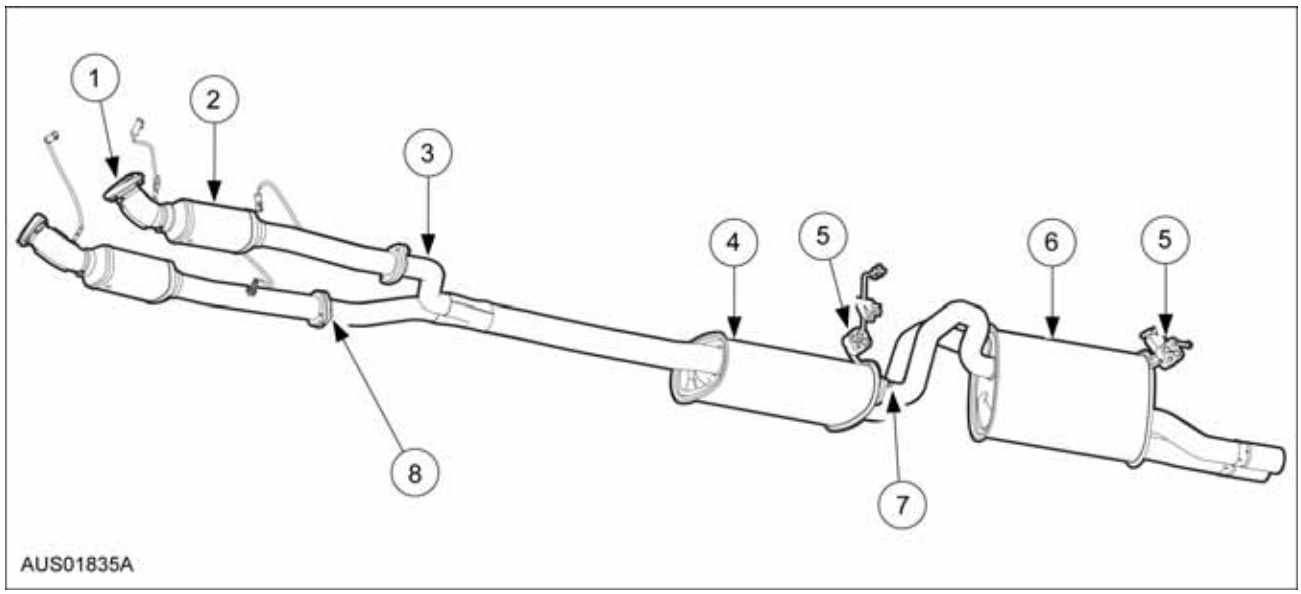
Ute - 6 cylinder (SFLPG)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Intermediate muffler assembly
4	Nut assembly
5	Rubber exhaust hanger insulators
6	Rear muffler assembly
7	Nut assembly
8	Resonator

REMOVAL AND INSTALLATION (Continued)

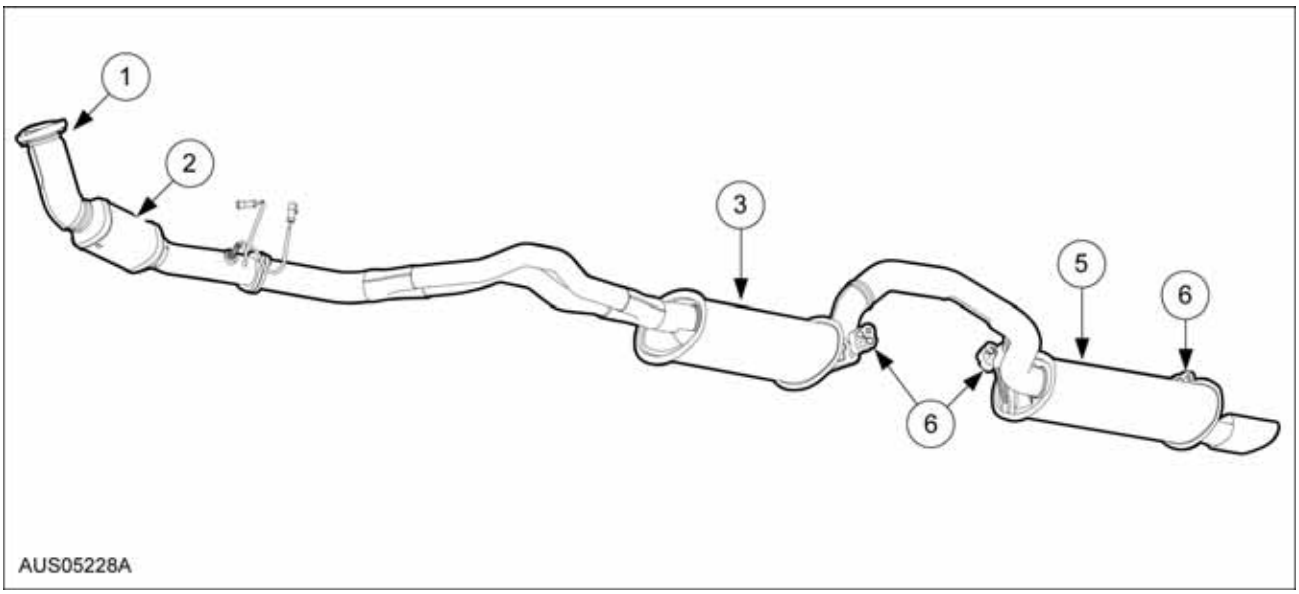
Ute - 8 cylinder (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Two-way adapter
4	Intermediate muffler assembly
5	Rubber exhaust hanger insulators
6	Rear muffler assembly
7	Nut Assembly
8	Nut Assembly

REMOVAL AND INSTALLATION (Continued)

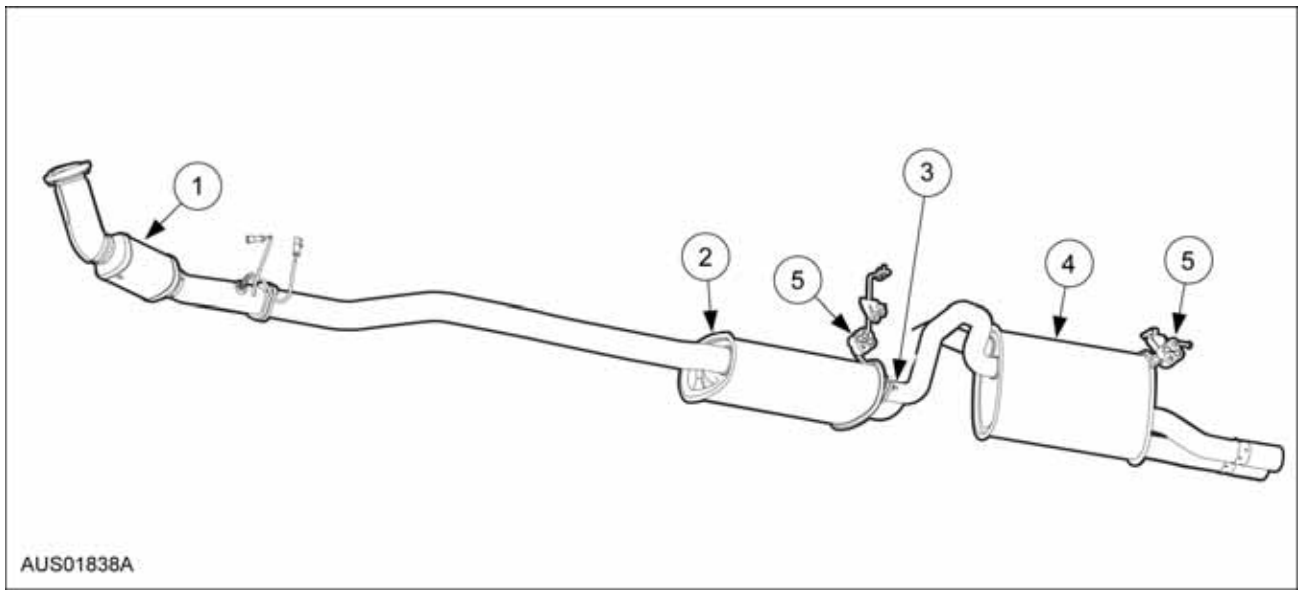
Sedan - XR6 Turbo (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	Intermediate muffler assembly
5	Rear muffler assembly
6	Rubber exhaust hanger insulators

REMOVAL AND INSTALLATION (Continued)

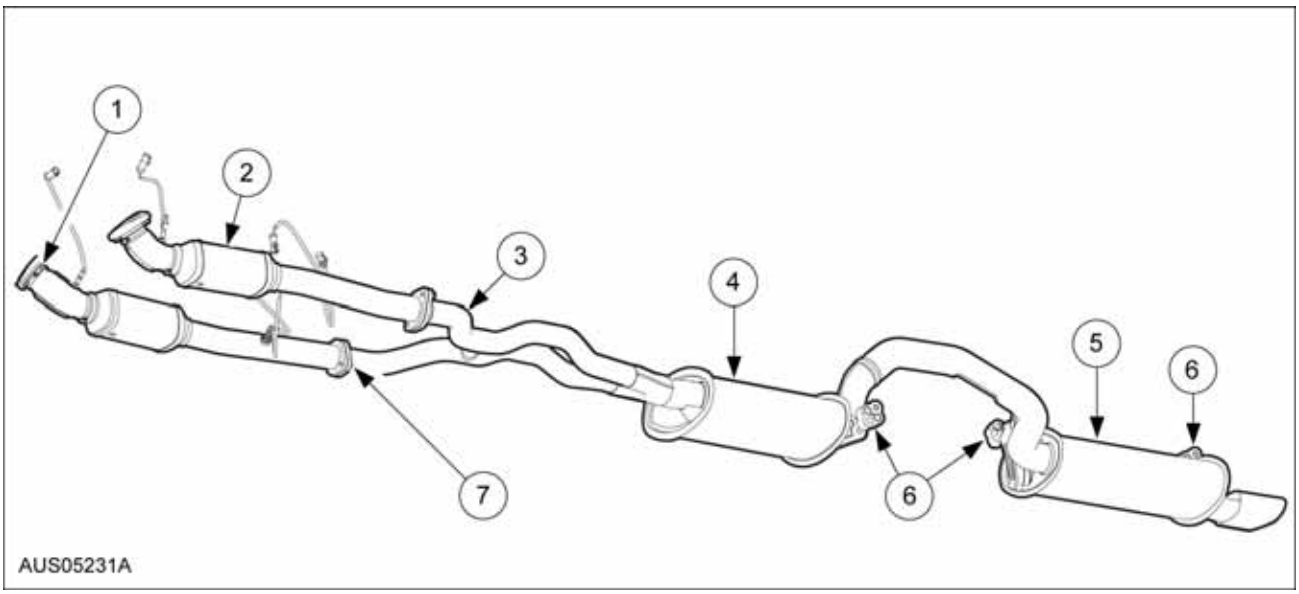
Ute - XR6 Turbo (ULP)



Item	Description
1	Three-way catalytic converter
2	Front muffler assembly
3	Nut assembly
4	Rear muffler assembly
5	Rubber exhaust hanger insulators

REMOVAL AND INSTALLATION (Continued)

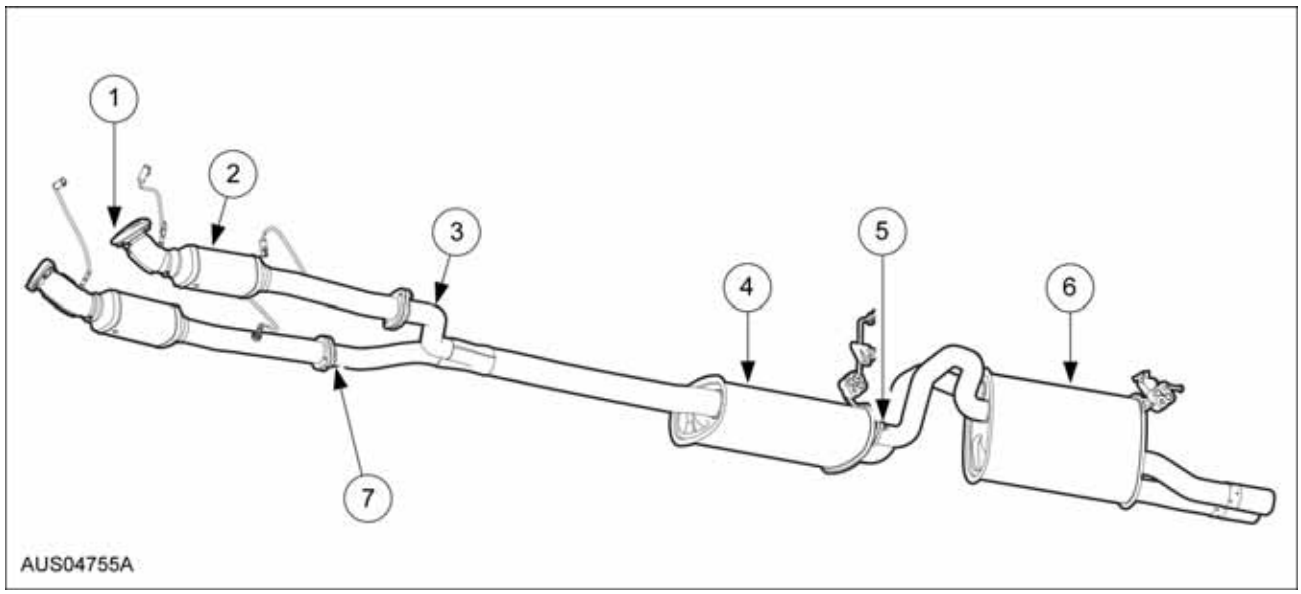
Sedan - XR8 (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	XR8 Y Pipe Assembly
4	Intermediate muffler assembly
5	Rear muffler assembly
6	Rubber exhaust hanger insulators
7	Nut assembly

REMOVAL AND INSTALLATION (Continued)

Ute - XR8 (ULP)



Item	Description
1	M10 Nut assembly
2	Three-way catalytic converter
3	XR8 Y Pipe Assembly
4	Intermediate muffler assembly
5	Nut assembly
6	Rear muffler assembly
7	Nut assembly