

Chapter Q

Exhaust system

Section

Exhaust gas poisoning and First aid

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Chapter Q

Exhaust gas poisoning and First aid

Danger — Exhaust gas

Inhaling exhaust gas is dangerous.

If it is necessary to run the engine inside a building, always ensure that the exhaust gas is suitably piped to the outside.

First aid — Burns

Before commencing work on the exhaust always ensure that the system is not hot.

In the event of a skin burn, cold clean water should be run over the affected area and if necessary, a dry dressing temporarily applied.

A medical centre or doctor should be consulted as soon as possible after administering this emergency treatment.

Chapter Q

Issue record sheet 1

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The dates quoted below refer to the issue date of individual pages within this chapter.

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Section Q1

Exhaust manifold

Exhaust manifolds – To remove

1. Support each downtake pipe just forward of the front silencers with wooden blocks and jacks.
2. Remove the clamps from around the downtake to manifold joint on 'A' and 'B' bank. Free both joints.
3. Detach the two choke stove pipes from the unions located on 'B' bank manifold. Blank off the pipes to prevent ingress of dirt (see Fig. Q1).
4. Remove the setscrews and distance pieces securing the manifolds to the cylinder heads, withdraw the manifolds.

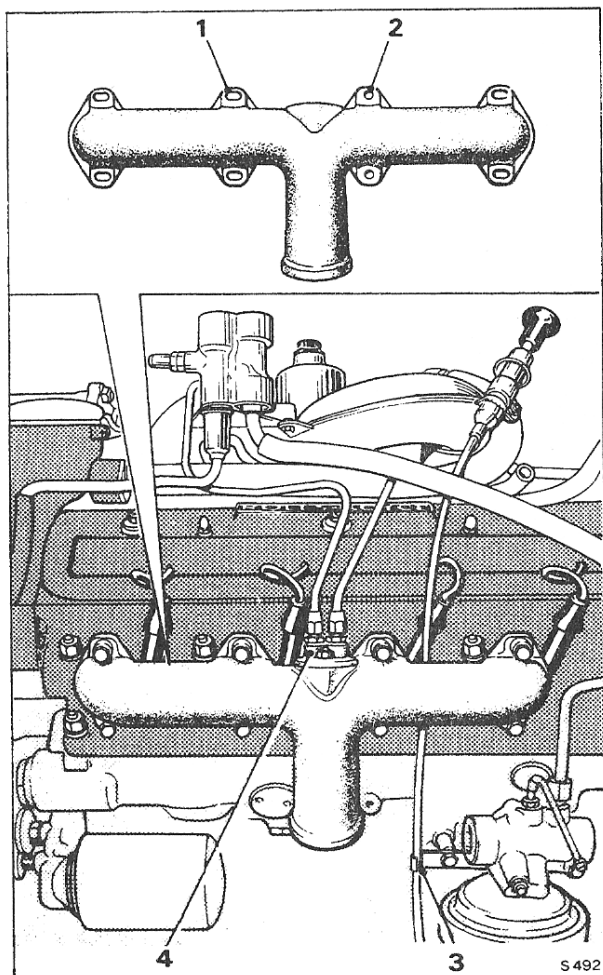


Fig. Q1 'B' bank exhaust manifold

- 1 Elongated expansion hole
- 2 Location hole
- 3 Dipstick tube
- 4 Choke stove assembly

5. Discard the gaskets fitted between the manifolds and the cylinder heads.
6. Blank off the ports in the cylinder heads to prevent the ingress of dirt and other foreign matter.

Exhaust manifolds – To inspect

1. Using medium grade emery cloth, lightly dress the manifold to downtake pipe joint.
2. Remove any scale on the manifold (to cylinder head) joint faces.
3. Check for distortion of the manifold (to cylinder head) joint faces using a straight edge.
4. Minor distortions can be corrected by rubbing the manifold joint faces across the cutting surface of medium grade emery cloth which is secured on its smooth side to a surface table.

Note

It is important that the manifold (to cylinder head) joint faces are flat, clean and square.

Exhaust manifolds – To fit

To fit the manifolds reverse the procedure given for their removal, noting the following points.

1. Ensure that all joint faces are free from scale and emery dust before assembly.
2. Lubricate all joint threads with oil to ensure that the threads do not bind.
3. Smear the spherical seating faces and the groove in the spherical clamps with a graphite lubricant to assist in correct alignment.
4. All nuts and bolts should be tightened to the correct torque figure (see Chapter P). Manifold setscrews must be tightened evenly, starting at the centre and working outwards.
5. After the engine has been run sufficiently to reach normal operating temperature, the manifold setscrews and spherical joint clamp bolts should be checked and if necessary, again tightened to the correct torque figure (see Chapter P).

Q2 - 2

specifications, this balance pipe is always fitted as the E.G.R. (exhaust gas recirculation) feed pipe is connected to it.

Exhaust pipes and silencers – To remove (see Fig. Q2)

1. Drive the car onto a ramp and raise the ramp.
2. Detach the rear silencers and pipework at the spherical joints situated behind the intermediate silencers. Remove the sealing rings.
3. Support the weight of the rear silencers assembly.
4. The rear silencers and pipes are mounted at two points which should be dismantled as follows,
 - (a) at the mount situated just forward of the drive-shaft. Unscrew the two ½ in. A/F nuts securing the exhaust pipes bracket to the metal mount bracket, collect the washers and distance pieces.
 - (b) at the mount situated adjacent to the spare wheel carrier. Unscrew the two ½ in. A/F nuts from the 'U' clamp situated around the upper exhaust pipe. Collect the washers and remove the 'U' clamp.
5. Withdraw the rear section of the exhaust system.
6. Remove the 'U' clamp and spherical joint to detach the intermediate balance pipe (not fitted on late cars).
7. Release the 'U' clamp situated in front of the 'A' bank intermediate silencer. Twist at the joint to break the seal and withdraw the silencer assembly.
8. Detach the pipe to the rear of 'A' bank front silencer at the 'U' clamp (or spherical joint on late cars) and at the resilient metal mount situated behind the body crossbeam.
9. Support the weight of 'A' bank front silencer. Unfasten the 'U' clamp (or spherical joint on late cars) attaching the silencer to the downtake pipe. Twist at the

joint to break the seal and withdraw the silencer assembly.

10. Detach 'B' bank intermediate silencer at the spherical joint situated just forward of the silencer body (this joint is deleted on late cars). Withdraw the silencer and collect the sealing ring.
11. Unfasten the 'U' clamp at the rear of the front silencer (or spherical joint on late cars) and the resilient metal mount attached to the pipework. Withdraw the pipe (on late cars withdraw the intermediate silencer and pipe).
12. Support the weight of the front silencer. Release the 'U' clamp situated in front of the silencer assembly (or spherical joint on late cars), free the joint and withdraw the silencer.
13. On cars built to the Australian specification remove the vertical EGR pipe, refer to Chapter U – Emission Control Systems.

Release the 'U' clamp and detach the spherical joint attaching the balance pipe across the 'A' and 'B' bank downtake pipes. The balance pipe can now be twisted at the sliding joint. Collect the sealing ring from the flared end before withdrawing the balance pipe.

14. Remove the downtake pipes, refer to Section Q1, Exhaust manifolds to remove, Operations 1 and 2.

Note

Check all threads for damage and discard any 'U' clamps which are splayed.

Exhaust pipes and silencers – To fit

To assemble reverse the procedure given for removal, noting the following points.

1. Ensure that all sliding joints are a good fit in their respective stub pipes to allow for adjustment.
2. The arrow stamped on each silencer must point to the rear when the box is assembled into the system.
3. All sealing rings and pipes must be thoroughly clean and free from scale. If necessary, they can be lightly dressed with fine emery cloth.

To ensure free movement of the joints for correct alignment of the components, the angular faces of the sealing rings and grooves in the spherical clamps should be smeared with a graphite lubricant.

All threads should be oiled to prevent binding.

4. Do not fully tighten the joints until the system has been fitted and manoeuvred to obtain the best run (free from possible fouls) with good joint alignment.
5. When the pipe runs are satisfactory, apply a sealant such as Holts Firegum, into the ends of any straight tube joint. Ensure that the slits down the sides of the silencer stub pipes are covered.

Note

Do not overtighten the 'U' clamps across the sliding joints as this could 'crimp' the inner and outer tubes together, causing difficulty for future dismantling.

6. When fitting the chrome plated tail pipe finishers, ensure the end faces of the outlets are in line and level.
7. Figure Q5 gives the nominal distance from the end of the tail pipes to the outer edge of the rear bumper rubber.

8. The resilient metal exhaust mounts must be set approximately 6,35 mm. (0.250 in.) forward before tightening the 'U' clamp around the exhaust pipe (see Fig. Q6). This offset is to allow for expansion of the system.

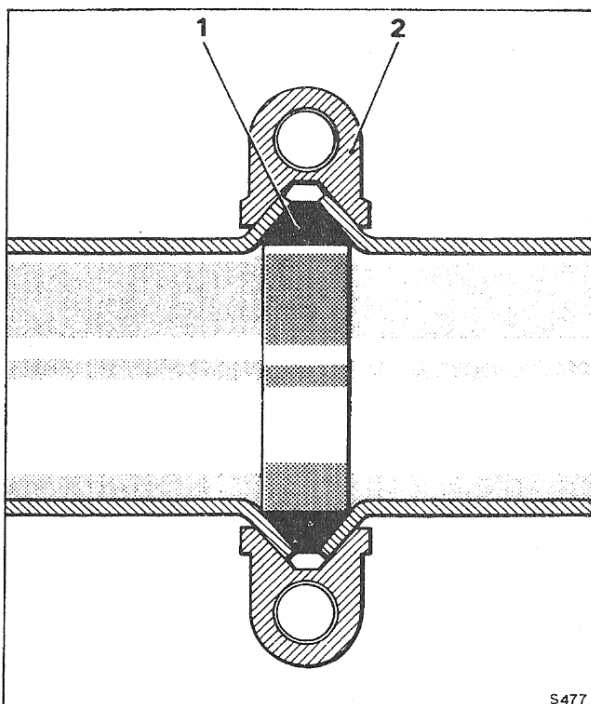


Fig. Q3 Flared exhaust pipe – spherical joint

- 1 Sealing ring
- 2 Joint clamp

Section Q2

Exhaust pipes and silencers

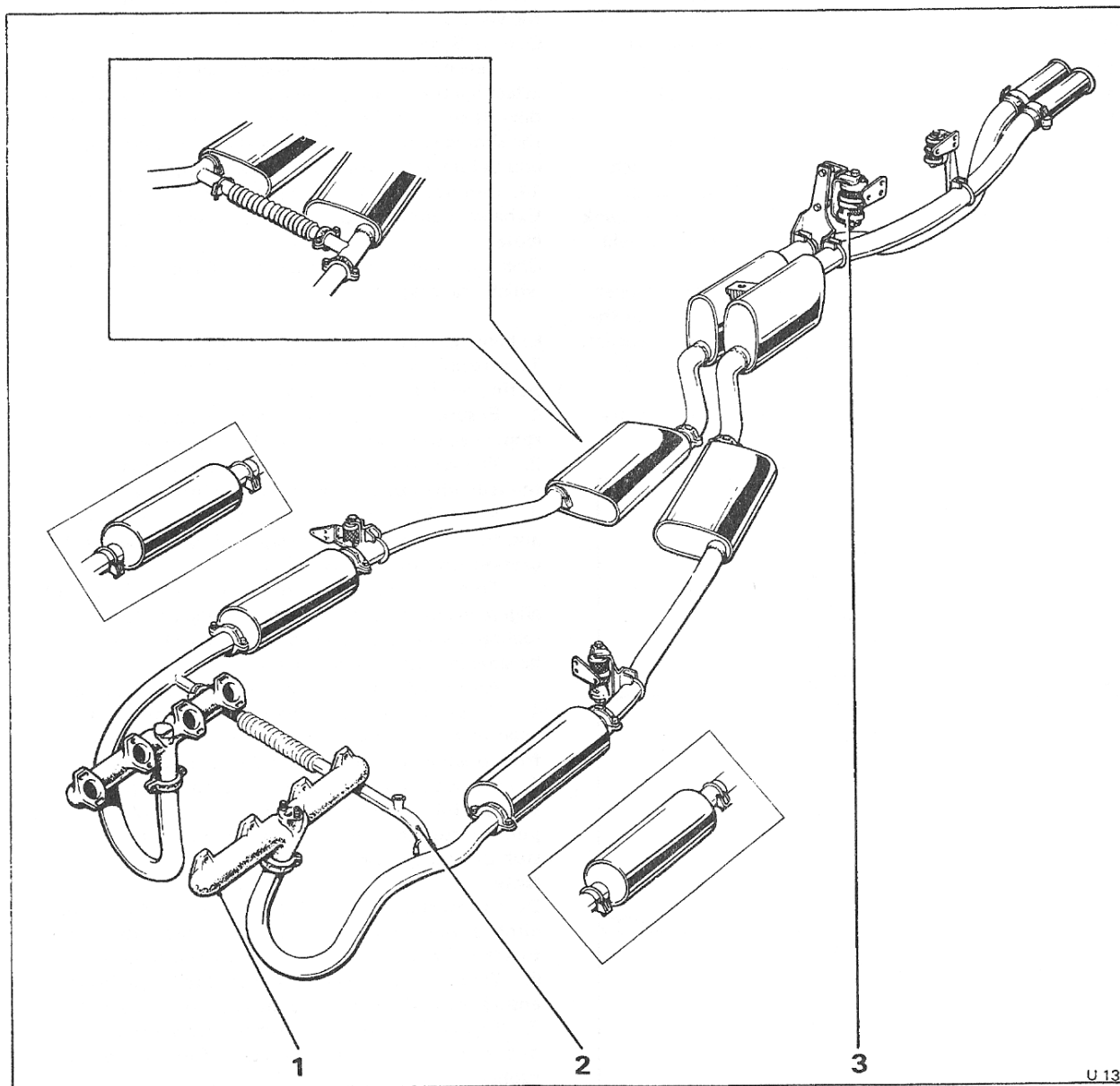
Cars other than those built to the Japanese and North American specifications prior to car serial number 50001

Introduction

The pipes and silencers form a six box twin exhaust system with a mid-point balance pipe just forward of

the intermediate silencers (not fitted on late cars).

On late cars, a balance pipe is fitted forward of the front silencers. On cars manufactured to the Australian



U 134

Fig. Q2 Exhaust system
(other than Canada, Japan and U.S.A.)

- 1 Exhaust manifold
 - 2 Front balance/EGR balance pipe (fitted on late cars)
 - 3 Vibrashock mount
- Inset Items fitted on early cars

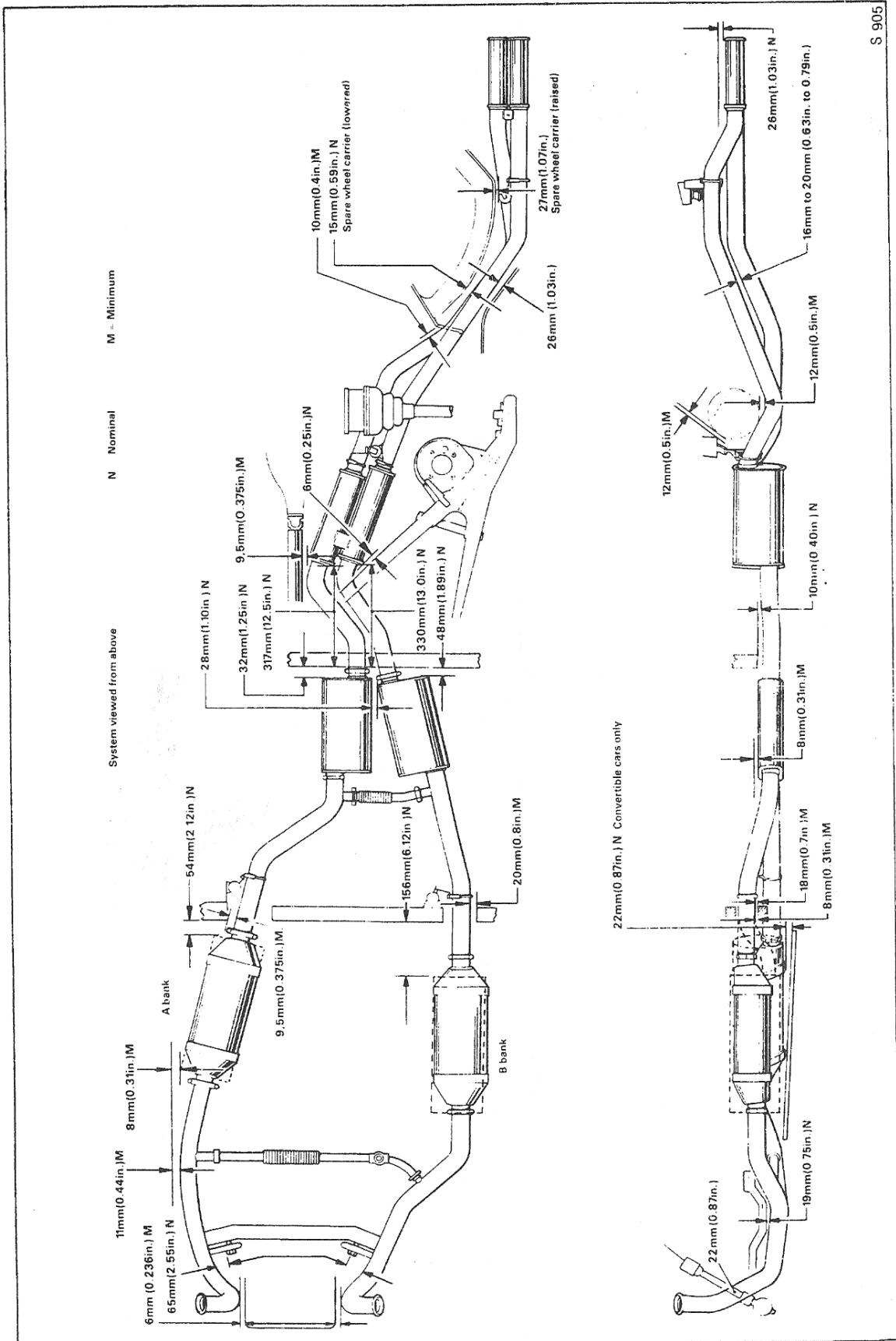


Fig. Q4 Exhaust system — clearance dimensions

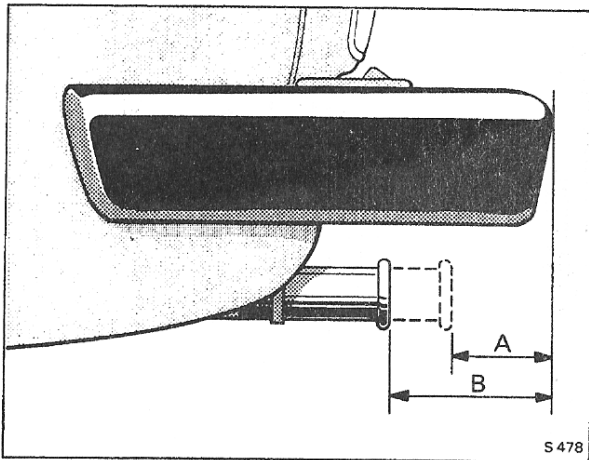


Fig. Q5 Tailpipes – nominal setting

- A Rolls-Royce Camargue 30mm. (1.2 in.)
- B All other models 63mm. (2.5 in.)

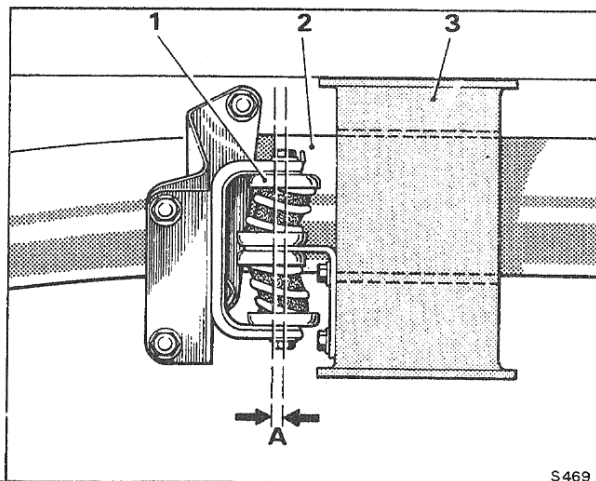


Fig. Q6 Exhaust mount – showing offset

- 1 Spring mount
- 2 Exhaust pipe
- 3 Body crossbeam
- A 4,76mm. (0.187 in.)

Exhaust pipes and silencers – To inspect

Inspection should include an investigation to ensure that misalignment has not caused the exhaust system to foul the sub-frames, suspension, body, transmission or engine components with resultant damage to any of these parts.

Inspect each resilient metal mount assembly to ensure that the spring mounts are working efficiently, with the fixing brackets rigidly attached to the underneath of the car body.

Section Q3

Exhaust pipes, silencers and grass-fire shields

Cars built to the Japanese and North American specifications prior to car serial number 50001

carrier. Unscrew the two ½ in. A/F nuts from the 'U' clamp situated around the upper exhaust pipe. Collect the washers and remove the 'U' clamp.

5. Withdraw the rear section of the exhaust system.
6. On cars produced prior to the 1979 model year specifications remove the 'U' clamp and spherical joint and withdraw the intermediate balance pipe (see Figs. Q7 and Q8). Collect the sealing ring from the spherical joint.
7. Release the 'U' clamp in front of the 'A' bank intermediate silencer. Twist the pipe assembly to break the seal and withdraw the silencer.
8. Detach the intermediate pipe at the resilient metal mount and the spherical joint, each situated at the rear of 'A' bank catalytic converter. Collect the sealing ring and remove the pipe.
9. Remove 'A' bank catalytic converter as described in Chapter U.
10. Detach the 'B' bank intermediate silencer and pipe assembly at the spherical joint to the rear of 'B' bank catalytic converter. Collect the sealing ring and withdraw the pipe.
11. Remove 'B' bank catalytic converter and detach the vertical EGR pipe, refer to Chapter U.
12. Remove the forward balance pipe fitted across 'A' and 'B' bank downtake pipes. Collect the sealing ring from the spherical joint.
13. Remove the downtake pipes, refer to Section Q1, Exhaust manifolds – To remove, Operations 1 and 2.

Note

When removing 'U' clamps check all threads for damage and discard any 'U' clamps which are splayed.

Exhaust pipes and silencers – To fit

To assemble, reverse the procedure given for removal, noting the following points.

1. Ensure that all sliding joints are a good fit in their respective stub pipes to allow for adjustment.
2. The arrow stamped on each silencer must point to the rear when the box is assembled into the system.
3. All sealing rings and pipes must be thoroughly clean and free from scale. If necessary they can be lightly dressed with fine emery cloth.
4. To ensure free movement of the joints for correct alignment of the components, the angular faces of the sealing rings and grooves in the spherical clamps should be smeared with a graphite lubricant.

All threads should be oiled to prevent binding.

5. Do not fully tighten the joints until the system has been fitted and manoeuvred to obtain the best run (free from possible fouls) with good joint alignment.
6. When the pipe runs are satisfactory, apply a sealant such as Holts Firegum, into the ends of any straight tube joint. Ensure that the slits down the sides of the silencer stub pipes are covered.

Introduction

The pipes and silencers form a six box twin exhaust system. An intermediate balance pipe is situated just forward of the intermediate silencers and an EGR (exhaust gas recirculation) feed and balance pipe is fitted just forward of the catalytic converters.

On cars built to the 1979 model year specification and onwards, the intermediate balance pipe is not fitted.

Note

Refer to the appropriate Chapter U, Emission Control Systems for information relating to model years.

Cars produced to the North American specifications have grass-fire shields fitted beneath the catalytic converters as shown in Figure Q7.

Cars manufactured to the Japanese specifications have grass-fire shields fitted beneath the complete exhaust system as shown in Figure Q8.

Grass-fire shields – To remove and fit

1. On cars destined for Japan, detach the rear shields, the shield covering the intermediate silencers and the shield over the EGR (exhaust gas recirculation) balance pipe.
2. Remove the remaining shields.
3. On cars destined for U.S.A. and Canada, remove the shields fitted beneath the catalytic converters.
4. Check that the shields are in good condition and that no breaks or cracks have occurred in the mesh.

If damage to a shield has occurred the shield must be discarded and a new one fitted.

5. Replace the shields by reversing the procedure for removal noting the following points.
6. Refer to Figure Q7 for details of cars produced to the North American specifications.
7. Refer to Figure Q8 for details of cars produced to the Japanese specifications.
8. On cars built to the Japanese specifications, ensure that a minimum gap of 5 mm. (0.20 in.) is maintained between the grass-fire shields and the exhaust system.

Exhaust pipes and silencers – To remove

1. Drive the car onto a ramp and raise the ramp.
2. Detach the rear silencers and pipework at the spherical joints situated behind the intermediate silencers. Remove the sealing rings.
3. Support the weight of the rear silencers assembly.
4. The rear silencers and pipes are mounted at two points which should be dismantled as follows,
 - (a) at the mount situated just forward of the drive-shaft. Unscrew the two ½ in. A/F nuts securing the exhaust pipes bracket to the metal mount bracket, collect the washers and distance pieces.
 - (b) at the mount situated adjacent to the spare wheel