

SECTION 6F

EXHAUST SYSTEM

ALL SERIES

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For Canadian vehicles equipped with non-closed loop engines, refer to the appropriate Canadian Service Manual Supplement.

GENERAL DESCRIPTION**EXHAUST SYSTEM**

All exhaust pipe connections to exhaust manifolds are of the ball joint type, to allow angular movement for alignment purposes. On all exhaust systems, the rear end of the catalytic converter assembly is also of the ball joint type. All other connections are of the slip joint type.

The exhaust system is supported by free-hanging rubber mountings which permit movement of the exhaust system, but do not permit transfer of noise and vibration into the passenger compartment.

Annoying rattles and noise vibrations in the Exhaust System are usually caused by misalignment of parts. When aligning the system, leave all bolts or nuts loose until all parts are properly aligned, then tighten, working from front to rear.

When replacing a muffler and/or resonator, the tailpipe(s) should also be replaced.

Sealer, such as 1051249 or equivalent, should be used at all slip joint connections except at the converter. **Do not use any sealers at the converter as the sealer will not withstand converter temperatures and some sealers may cause contamination to the internal components.**

CATALYTIC CONVERTER

The catalytic converter is an emission control device added to the exhaust system to reduce hydrocarbon and carbon monoxide pollutants from the exhaust gas stream. The converter contains beads which are coated with a catalytic material containing platinum and palladium. The catalytic converter for the Computer Command Control emission system will also contain rhodium to reduce the level of nitrogen oxides.

UNIT REPAIR**REMOVAL AND INSTALLATION OF EXHAUST SYSTEM PARTS**

When installing exhaust parts, make sure there is sufficient clearance between the hot exhaust parts and pipes and hoses that would be adversely affected by excessive heat.

Check complete exhaust system and nearby body areas and trunk lid for broken, damaged, missing, or mispositioned parts, open seams, holes, loose connections, or other deterioration which could permit exhaust fumes to seep into the trunk or passenger compartment. Any damaged areas must be corrected immediately. To help

insure continued integrity, when replacing the muffler, resonator or pipes rearward of the muffler due to wear out, all parts rearward, including the muffler should be replaced.

NOTICE: If any mispositioning, incorrect assembly, or failure of components in the area of the brake system pipes, hoses, or cylinders is observed, be sure to check for any brake damage that may have resulted from such a condition and correct as required. Make sure that exhaust system components have adequate clearance from the floor pan to avoid possible overheating of the floor pan and possible damage to the passenger compartment carpets.

NOTICE: When jacking or lifting vehicle from frame side rails, be certain lift pads do not contact catalytic converter as damage to converter will result.

THE CATALYTIC CONVERTER REQUIRES THE USE OF UNLEADED FUEL ONLY

Periodic maintenance of the exhaust system is not required; however, if the car is raised for other service, it is advisable to check the general condition of the catalytic converter, pipes, and mufflers.

The catalyst in monolith and bead type converters is not serviceable.

"N" SERIES EXHAUST

Two types of catalytic converters will be used:

1. LN7 engines will utilize a monolith converter.
2. L68 engines will utilize a bead-type converter.

The pictures used in this section will show the monolith converter. Bead converter system service is exactly the same.

The exhaust system on the "N" Series vehicles is completely welded and can be serviced by four components.

- o Exhaust pipe
- Catalytic converter
- o Intermediate pipe
- o Muffler and tail pipe assembly

There are several things that must be remembered when servicing this system:

1. When components are replaced, cuts must be made in areas shown in Figure 6F-1, 6F-3 and 6F-5.
2. When installing a replacement converter to an existing exhaust or intermediate pipe, the remaining portion of

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the converter inlet/outlet pipe in the pipe must be removed. (See Figure 6F-7.)

- Any time the converter and adjacent pipe is replaced, remaining portion of the converter inlet/outlet pipe that is supplied with the pipe, must be used.

CAUTION: If a converter and adjacent is replaced and a sleeve (or spacer) is not used, a poor fit could result allowing exhaust gasses to be released under the the car.

Front Exhaust Pipe Replacement

- Support catalytic converter and cut front exhaust pipe at converter as shown in Figure 6F-1. Monolith converter is shown but bead converter dimensions are the same.
- Unbolt exhaust pipe at exhaust manifold and remove pipe.
- Install replacement pipe, sliding pipe over converter opening. (See Figure 6F-2.)
- Install exhaust manifold seal, exhaust pipe, springs and bolts. Torque bolts to $30 \text{ N}\cdot\text{m}$ (22 ft. lbs.).
- Install guillotine type clamp and torque to $35 \text{ N}\cdot\text{m}$ (26 ft. lbs.)

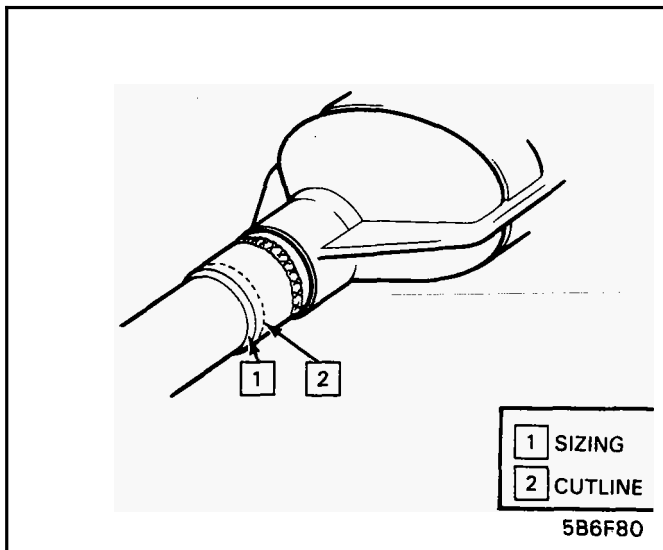


Figure 6F-1 "N" Series Exhaust or Intermediate Pipe Cut Location

Catalytic Converter Replacement

- Cut the exhaust manifold pipe at the converter close to weld as shown in Figure 6F-3 with chain type pipecutter or metal cutting saw.
- Support converter and cut intermediate pipe close to weld as shown in Figure 6F-3.
- Collapse and remove remaining portion of converter inlet/outlet pipe on inside of both pipes.
- Install new converter. Pipe ends will slip over converter openings and into muffler opening. (see Figure 6F-4).
- Use guillotine type clamps and torque to $35 \text{ N}\cdot\text{m}$ (26 ft. lbs.).

Intermediate Pipe Replacement

- Support muffler and catalytic converter.
- Cut intermediate pipe at muffler as shown in Step 2 of muffler replacement (see Figure 6F-5).

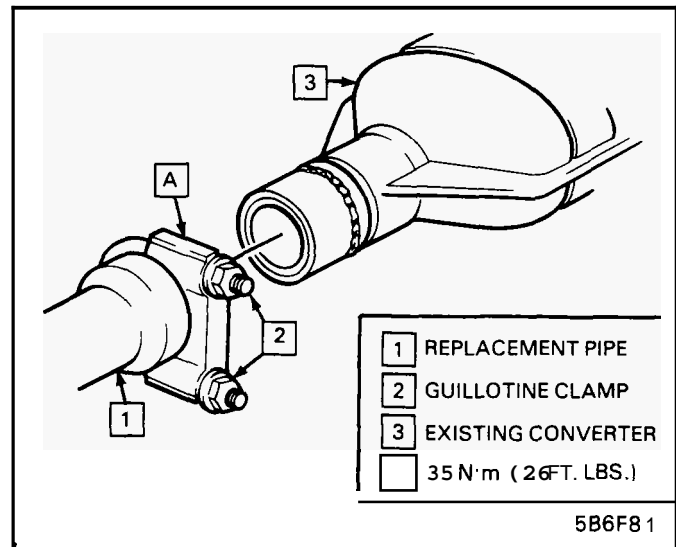


Figure 6F-2 "N" Series Exhaust or Intermediate Pipe Installation

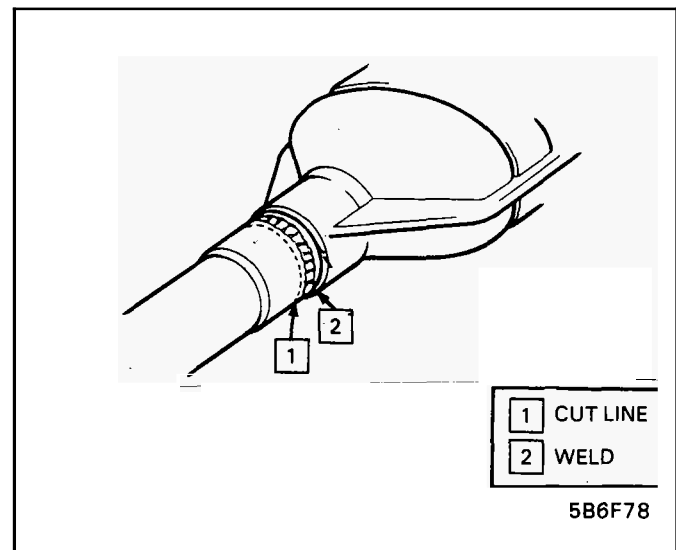


Figure 6F-3 "N" Series Converter Cut Location

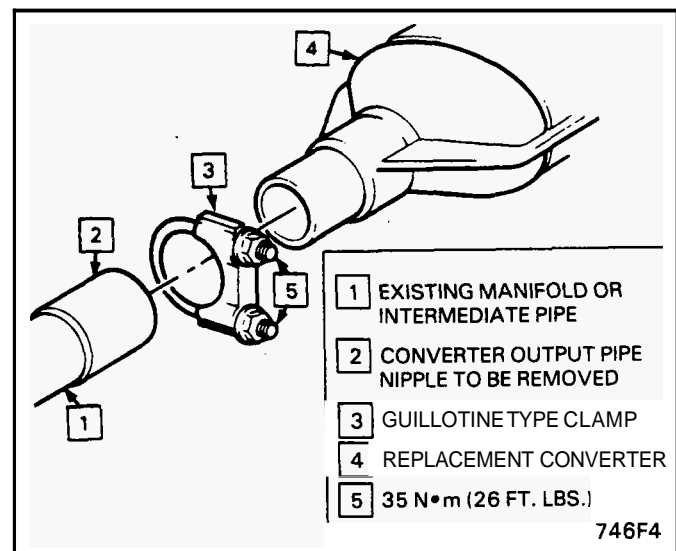


Figure 6F-4 "N" Series Replacement converter Installation

- Support intermediate pipe and cut pipe at converter just behind sizing as shown in Figure 6F-1. Do not remove portion of pipe left in the converter opening.

4. Install new intermediate pipe. New intermediate pipe will slip over converter opening and into the muffler opening. (See Figure 6F-2 and 6F-6.)
5. Install a guillotine type clamp at the converter and a saddle/u-bolt clamp at muffler and torque to 30 N·m (22 ft. lbs.).

Muffler Replacement

Replacing muffler without replacing intermediate pipe:

1. Support intermediate pipe and muffler.
2. Cut intermediate pipe at muffler in front of weld as shown in Figure 6F-5.
3. Disconnect muffler hanger from muffler and remove the muffler.
4. Install new muffler and attach muffler hanger. Inlet opening of muffler will slide over the intermediate pipe. (See Figure 6F-6.)
5. Install saddle/u-bolt clamp and tighten to 30 N·m (22 ft. lbs.).

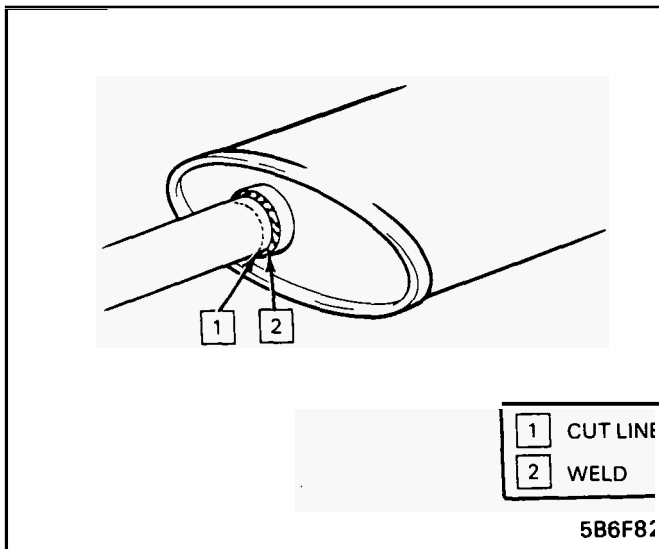


Figure 6F-5 "N" Series Muffler Cut Location

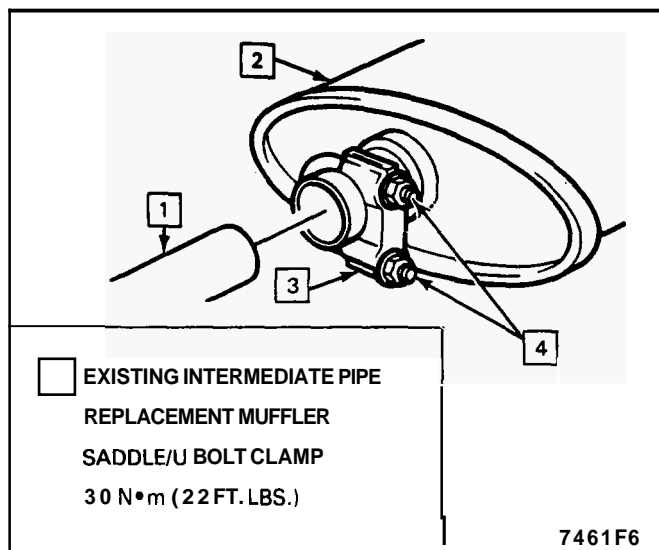


Figure 6F-6 "N" Series Muffler Installation

Complete Exhaust Replacement

When a complete exhaust is installed, remember to:

1. Install sleeve into both pipes at converter. Sleeve is included with each pipe as shown in Figure 6F-7.

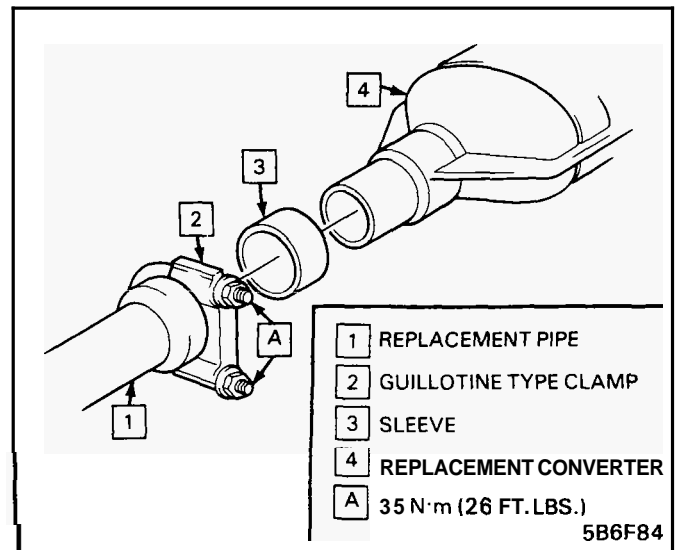


Figure 6F-7 "N" Series Sleeve Installation

Bottom Cover

If, for any reason, the bottom cover of a bead type converter is torn or punctured, it can be replaced with a repair kit.

Bottom Cover Replacement

1. Remove bottom cover by cutting close to the bottom outside edge (Figure 6F-8 or 6F-9). Do not remove the fill plug. The depth of the cut must be very shallow to prevent damage to the inner shell of the converter.

NOTICE: On the dual bed converter, follow the contour of the air inlet tube carefully so that it is not punctured.

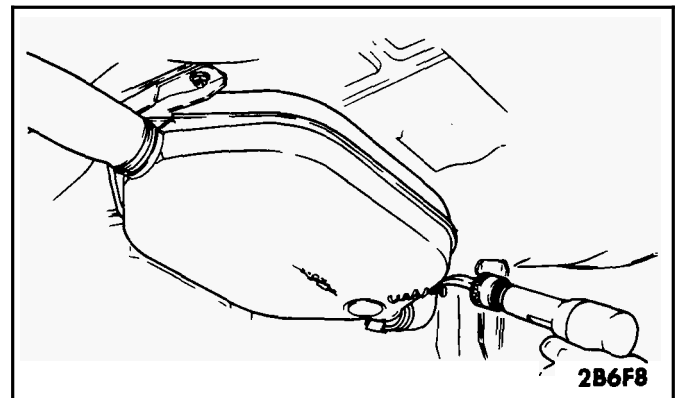


Figure 6F-8 Cutting Cover with Power Tool

2. Remove insulation.
3. Inspect inner shell of the converter for damage. If there is damage in the inner shell, the converter assembly must be replaced.
4. Place new insulation in the replacement cover. Apply sealing compound all around the cover after the insulation is in position. Apply extra sealer at the front and rear opening for the pipes, Figure 6F-10. On the dual bed converter, also apply extra sealer around the air inlet tube.
5. Install replacement cover on converter

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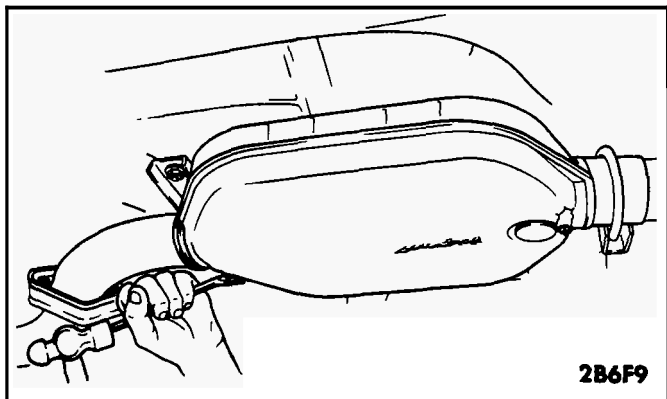


Figure 6F-9 Cutting Cover with Hand Tool

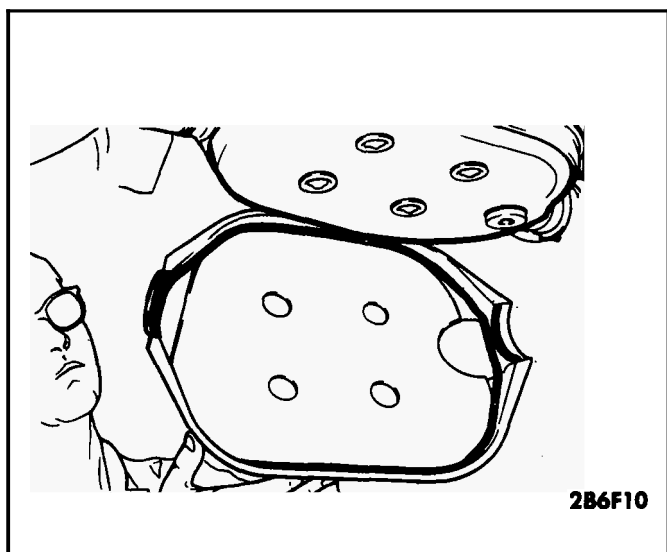


Figure 6F-10 Sealer Bead on New Cover

6. Install cover retaining channels on both sides of the converter (Figure 6F-11).

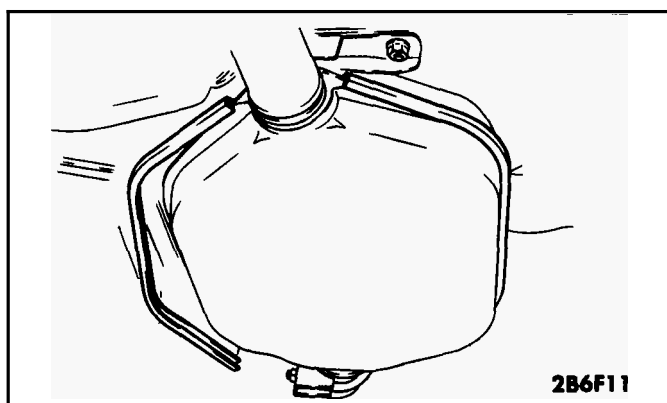


Figure 6F-11 Installing Retaining Channels

7. On the single bed converter, attach 2 clamps over the retaining channels at each end of the converter (Figure 6F-12).

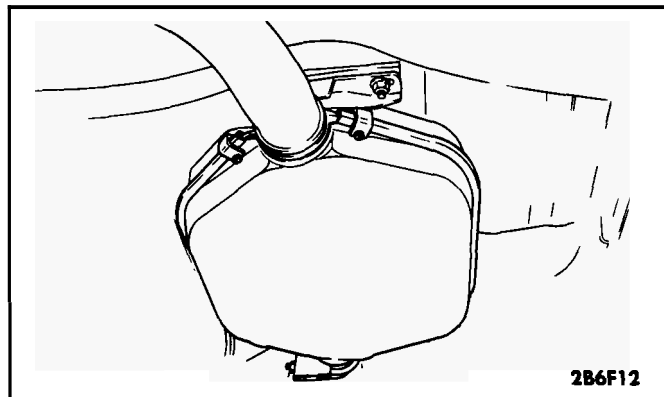


Figure 6F-12 Channel Clamps

- a. On the dual bed converter, attach 2 clamps over the retaining channels at each end of the converter plus one clamp without a retaining channel between the air inlet tube and exhaust inlet pipe (Figure 6F-13). Position the air inlet tube clamps as shown in Figure 6F-13.

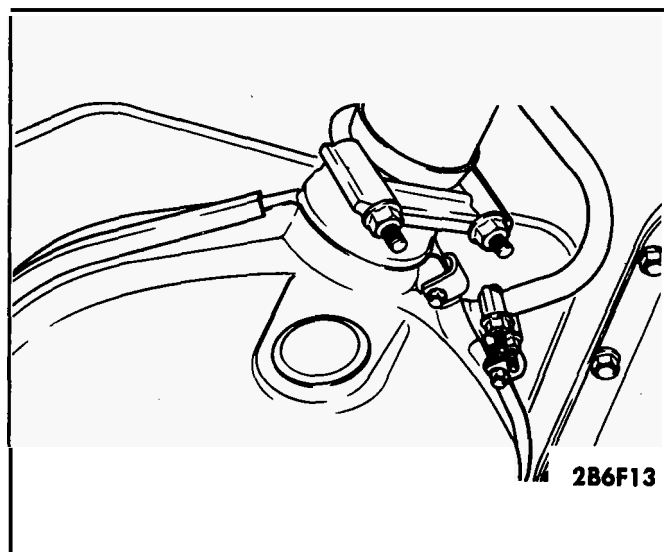


Figure 6F-13 Clamping A.I.R. Pipe

Exhaust Gas Recirculation

All 3.0L and 3.8L engines will use a ported EGR valve with an Electronic Vacuum Regulator Valve to control the system.

1. See the appropriate Emission Section for description, operation and diagnosis.
2. See Maintenance Schedule for EVRV filter maintenance.

Air Injection Reaction (A.I.R.)

The Air Injection Reaction System (A.I.R.) is used to pump air into some catalytic converter. Valve and pipe mounting as well as torque are shown in Figures 6F-31 and 6F-32. For complete description and diagnosis, see the appropriate 6E Section.

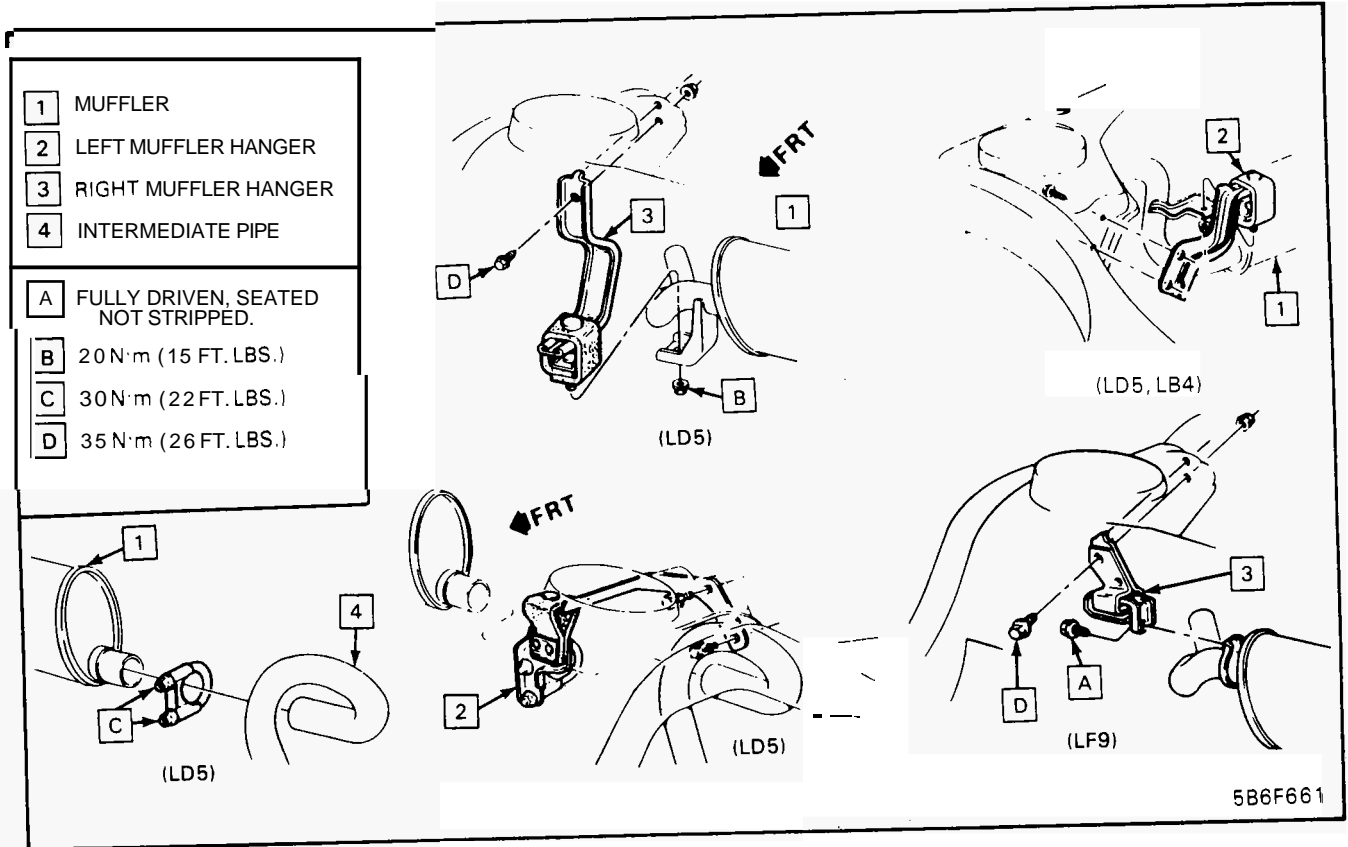


Figure 6F-18 G Series Muffler Attachment

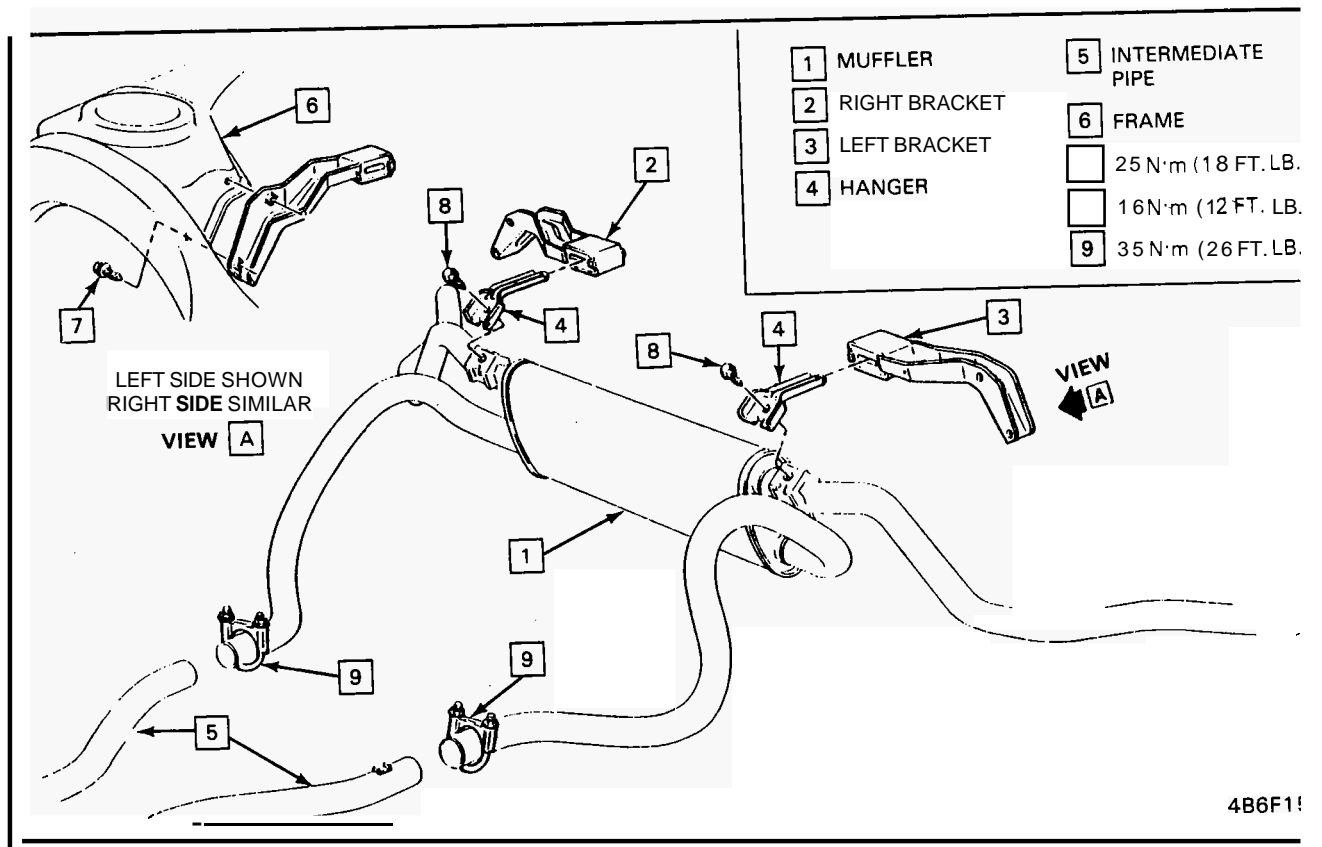


Figure 6F-18A G Series Muffler Attachment LC2

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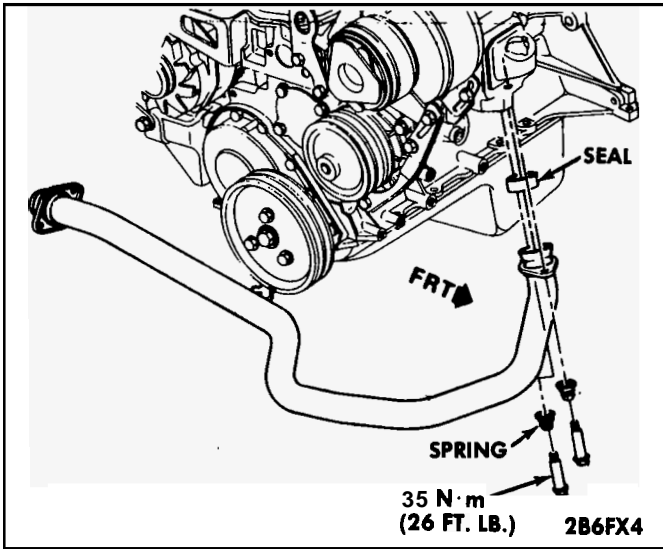


Figure 6F-19 A Series Manifold Attachment-LR8

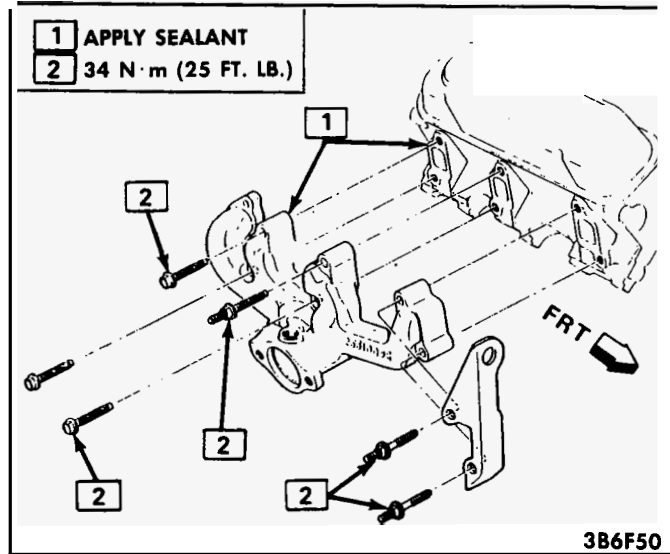


Figure 6F-20 N Series Manifold Attachment-LN7

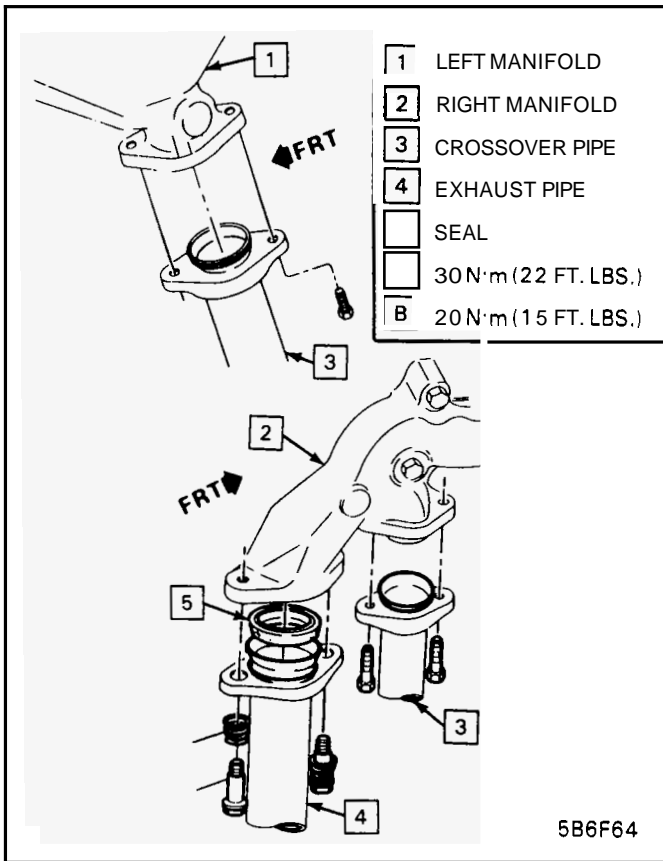


Figure 6F-21 G Series Manifold Attachment-LD5

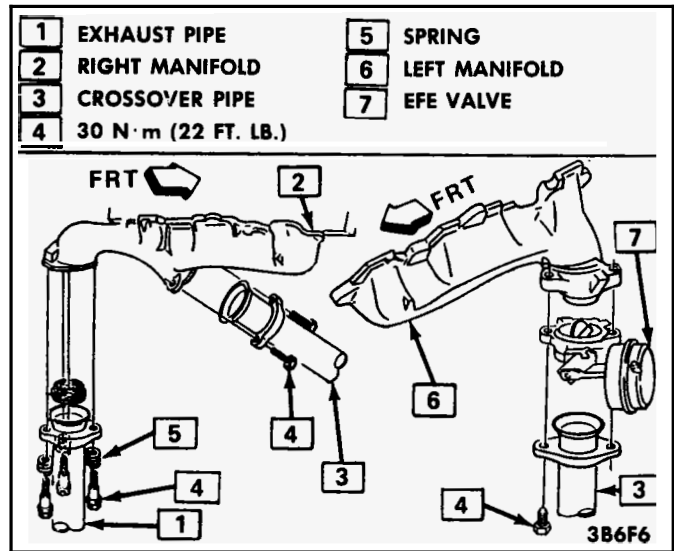


Figure 6F-22 B Series Manifold Attachment-LV2

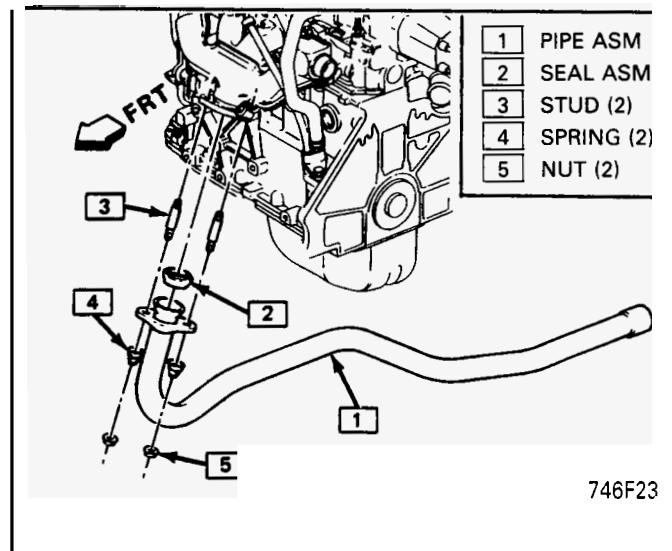
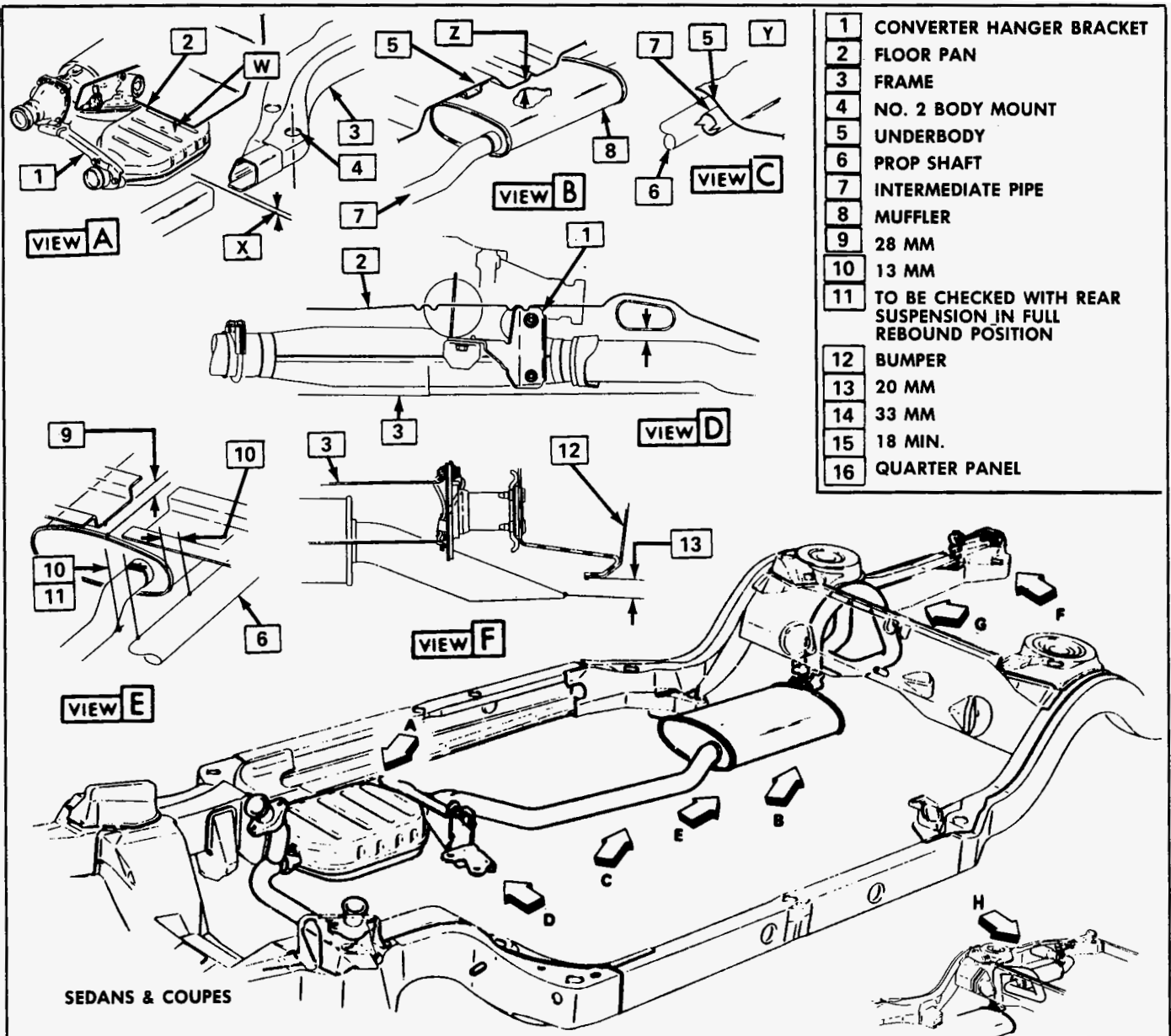


Figure 6F-23 J Series Manifold Attachment - LT2



CLEARANCE DIMENSIONS WITHOUT SHIELDS

- W** 26 MM MINIMUM TOP OF CONVERTER TO FLOOR PAN AT ANY POINT
- X** 13 MM MAXIMUM BOTTOM OF CONVERTER TO BOTTOM OF FRAME SIDE RAIL AT ITS LOWEST POINT (LOCATE USING DIM. SHOWN)
- Y** 29 MM MINIMUM INTERMEDIATE PIPE TO UNDERBODY AT ANY POINT
- Z** 15 MM MINIMUM TO OF MUFFLER TO UNDERBODY

CLEARANCE DIMENSIONS WITH SHIELDS

- W** 15 MM MINIMUM TOP OF CONVERTER TO SHIELD AT ANY POINT
- X** 13 MM MAXIMUM BOTTOM OF CONVERTER TO BOTTOM OF FRAME SIDE RAIL AT ITS LOWEST POINT. (LOCATE USING DIM. SHOWN)
- Y** 15 MM MINIMUM INTERMEDIATE PIPE TO SHIELD AT ANY POINT
- Z** 8 MM MINIMUM TOP OF MUFFLER TO SHIELD

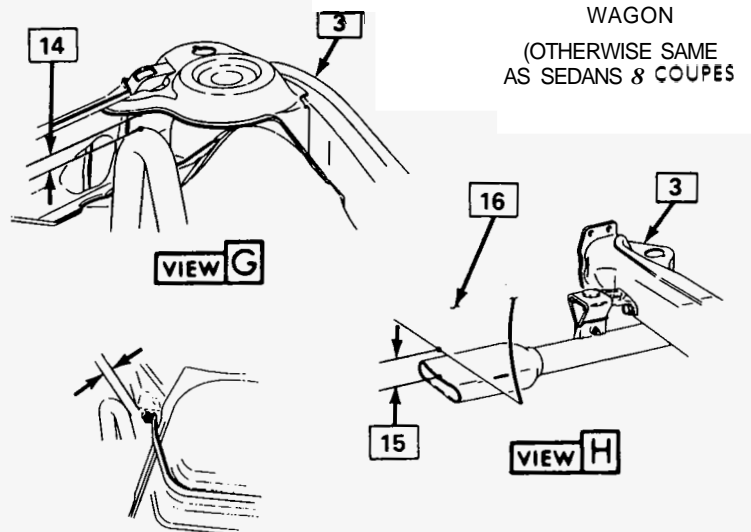


Figure 6F-37 B Series Minimum Clearance Requirements

6F-18 EXHAUST SYSTEM

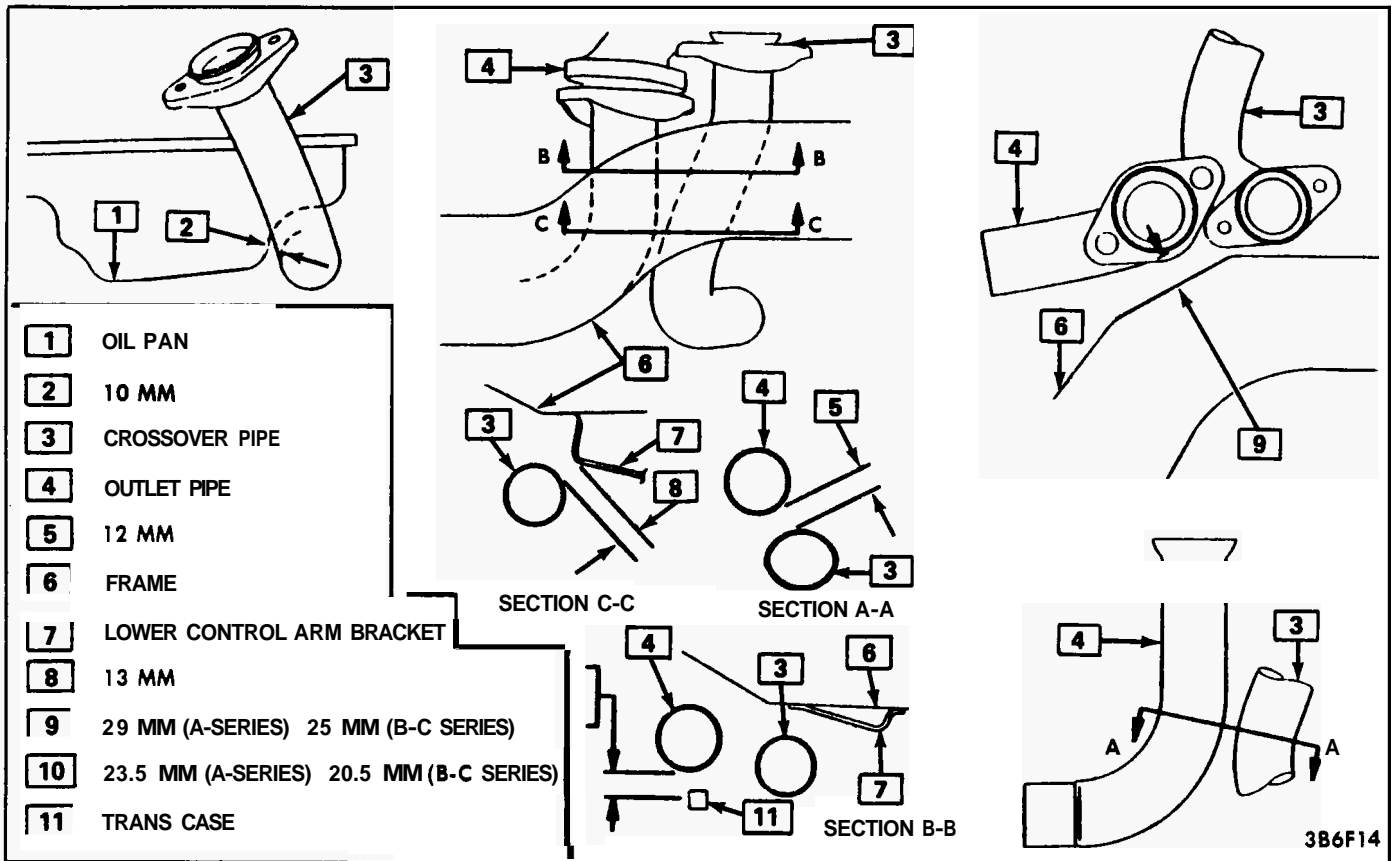


Figure 6F-38 B-G Series Minimum Clearance Requirements