SECTION 8A1 – FUEL TANK

IMPORTANT

Before performing any Service Operation or other procedure described in this Section, refer to Section 00 CAUTIONS AND NOTES for correct workshop practices with regard to safety and/or property damage.

CONTENTS

1. GENERAL INFORMATION

The 75-litre fuel tank fitted to all MY 2003 VY Series Sedan, Wagon and Coupe models is a high-density polyethylene construction with an integral fuel filler neck. The fuel tank is fitted under the load compartment floor and is supported by three mounting straps that differ marginally between the different body styles.

The 70-litre fuel tank fitted to all MY 2003 VY Series Utility models is a pressed steel construction, with a separate fuel filler neck. The filler neck is made up of a steel pipe lower section which is bolted to the tank, a flexible rubber centre section with hose clamps either end and a steel upper pipe that incorporates the filler neck vent fitting and counter syphon measures. The fuel tank is fitted underneath the load floor front panel assembly and retained by bolts and washers.

A seal is fitted around the fuel filler neck where it protrudes through the vehicle body. The fuel tank is not repairable on any model and if damaged, must be replaced.

An in-tank, modular fuel pump and sender assembly is used in all fuel tanks. The modular fuel pump and sender assembly incorporates a fuel reservoir, the fuel sender, jet pump and the electric fuel pump. In Sedan, Wagon and Coupe models, a rollover valve is also included, whereas in the Utility model it is fitted directly to the tank.

For vehicles fitted with the GEN III V8, the modular fuel pump and sender unit also incorporates a pressure regulator.

For vehicles fitted with the V6 Supercharged (and vehicles exported to Brazil), in addition to the complete assembly, several components of the modular fuel pump and sender assembly, including the fuel gauge sender assembly and connector kit can be serviced separately.

For V6 (excluding vehicles exported to Brazil) and GEN III V8, the modular fuel pump and sender is serviced as a complete assembly only.

Quick connect fuel line fittings are used for all fuel line connections, including the modular fuel pump and sender assembly, fuel vapour canister, fuel filter and fuel feed/return lines, at both the fuel tank and engine ends.

Servicing details for these and other fuel tank/line related items are covered in this Section.

For additional information regarding the fuel pressure regulator and fuel system electrical diagnostic procedures not contained in this Section for MY 2003 VY Series models refer to:

a. **Section 6C1 POWERTRAIN — V6 ENGINE**
b. **Section 6C2 POWERTRAIN — V6 SUPERCHARGED ENGINE**
c. **Section 6C3 POWERTRAIN — GEN III V8 ENGINE**

1.1 MODULAR FUEL PUMP AND SENDER ASSEMBLY

The modular fuel pump and sender assembly is designed to maintain an optimum fuel level in the reservoir. This ensures a continuous fuel flow under all fuel level conditions and vehicle attitudes. The modular fuel pump and sender assembly also provides an accurate means of measuring fuel level within the fuel tank.

FUEL PUMP — V6 ENGINE

Single Turbine Fuel Pump

Figure 8A1–1 details fuel flow through the single turbine fuel pump that is used with the V6 engine, except vehicles exported to Brazil.

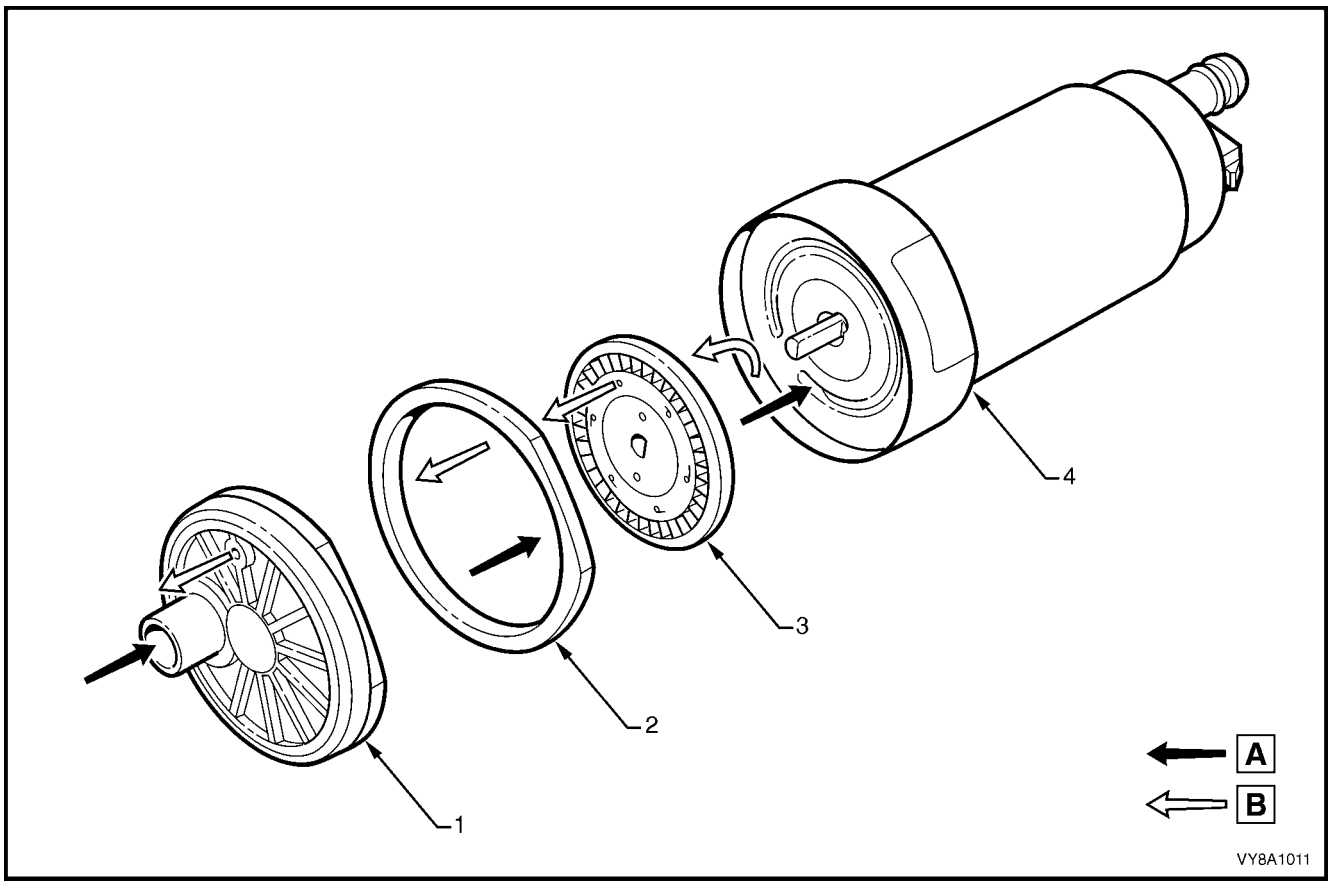


Figure 8A1–1

Legend

A. Fuel
B. Vapour out

1. Inlet Body
2. Impeller Housing
3. Impeller
4. Fuel pump housing

Fuel (A) is drawn into the reservoir of the modular fuel pump and sender assembly from the fuel tank, through the primary umbrella valve (4), and into the fuel pump's impeller, via the internal strainer (3) at the fuel pump inlet. At the impeller, vapour (C) is separated from the fuel. The vapour is ejected from the fuel pump (1) and into the reservoir via a port adjacent to the fuel pump's inlet.

High-pressure fuel then flows through the end cap, the lower connector and the fuel pump flex pipe. From the flex pipe, fuel then exits the modular fuel pump and sender assembly through the fuel feed fitting and flows on to the externally-mounted fuel filter and the engine.

Pressure is regulated at the downstream end of the engine fuel rail and return fuel (B) not used by the engine is returned to the fuel module via the return line and the return port of the modular fuel cover. The return fuel enters the jet pump standpipe (2) of the reservoir via the return fuel tube.

When the engine is switched off, the reservoir remains full of fuel, due to of the action of the primary umbrella valves. At higher fuel levels, fuel from the tank overflow enters the reservoir over the top of the reservoir. Fuel levels in the reservoir are also maintained by returned engine fuel.

Electrical power is supplied to the fuel pump by a connector that is secured to the cover. An internal harness assembly completes the connection to the pump (not shown).

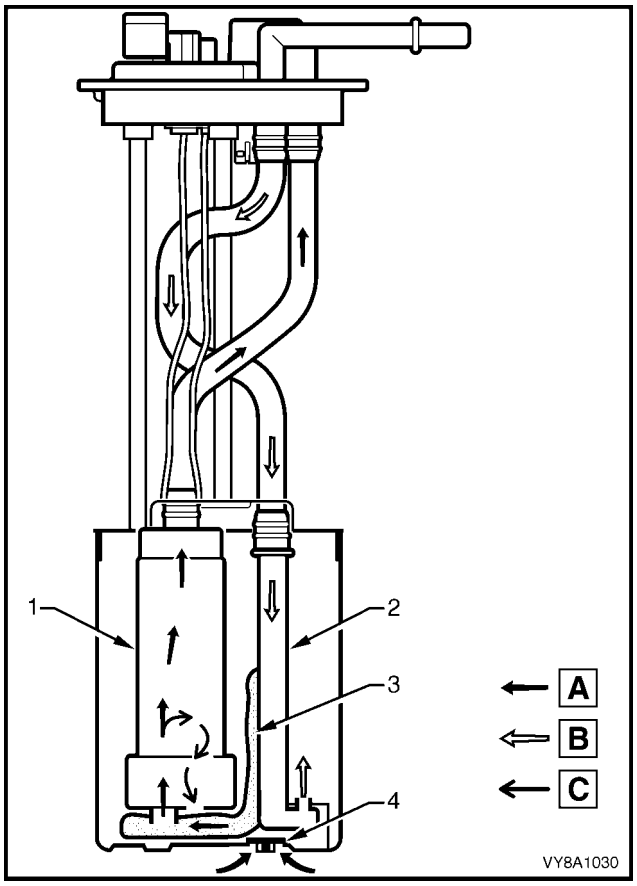


Figure 8A1–2

FUEL PUMP — V6 SUPERCHARGED ENGINE

Roller Vane Fuel Pump

Figure 8A1–3 details fuel flow through the roller vane fuel pump that is used with the V6 Supercharged engine.

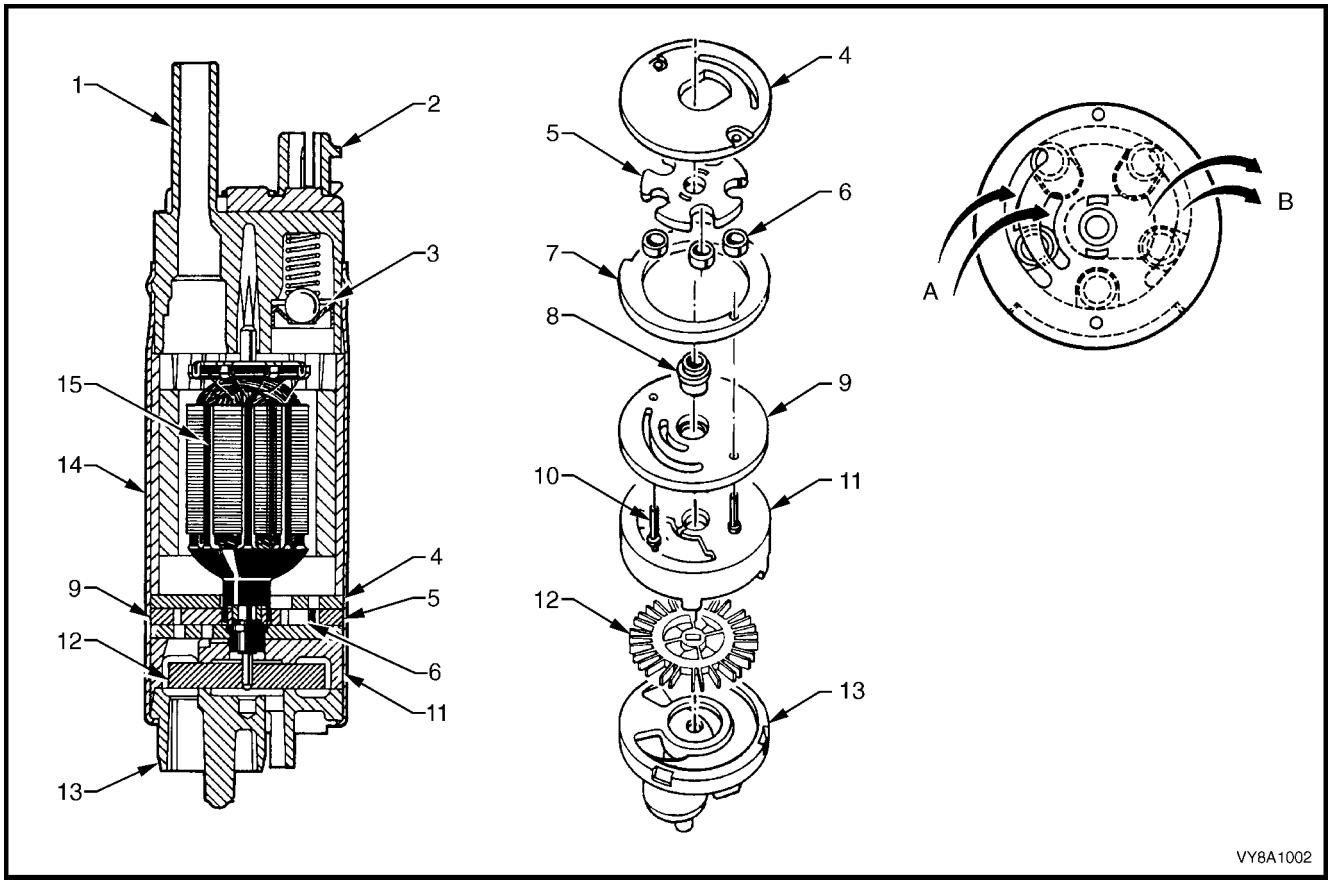


Figure 8A1–3

Legend

A. Fuel In
B. Fuel Out

1. End Cap
2. RFI Module
3. Relief Valve
4. Outlet Plate
5. Rotor
6. Rollers
7. Eccentric Ring
8. Bearing
9. Face Plate
10. Rivets
11. Housing
12. Impeller
13. Inlet Body
14. Shell
15. Electric Motor

Fuel (A) enters the roller vane fuel pump via the two strainers (3 and 5). In the first stage, fuel vapour (C) is separated from the liquid fuel within the fuel pump (6) and is returned to the fuel tank at low pressure and temperature.

The pump then discharges the liquid fuel into the roller vane section of the pump. The pump outlet is configured to divert the primary fuel volume to flow into the flex pipe and deliver a portion of the flow to the jet pump via an aspirator (1). The remaining fuel is diverted to an externally mounted fuel filter and then to the engine.

The diverted fuel from the outlet of the fuel pump passes through the jet pump filter (2). This creates a low pressure area at its base, causing the umbrella valve to unseat, drawing cooler fuel into the reservoir area from the fuel tank.

Return fuel (B) not used by the engine is returned to the fuel module via the fuel return line and the return port of the modular fuel cover. The return fuel enters the reservoir via the return fuel tube (7).

When the engine is switched off, the reservoir remains full of fuel, due to the action of the primary and secondary umbrella valves (4). During refuelling operations, the secondary umbrella valve unseats, allowing fuel to enter the reservoir up to the fuel tank level. At higher fuel levels, fuel tank overflow enters the reservoir over the top of the assembly.

If the external strainer becomes blocked or restricts fuel entry, the secondary umbrella valve unseats, allowing fuel to enter the reservoir area.

Electrical power is supplied to the fuel pump by a connector that is secured to the cover. An internal harness assembly completes the connection to the pump (not shown).

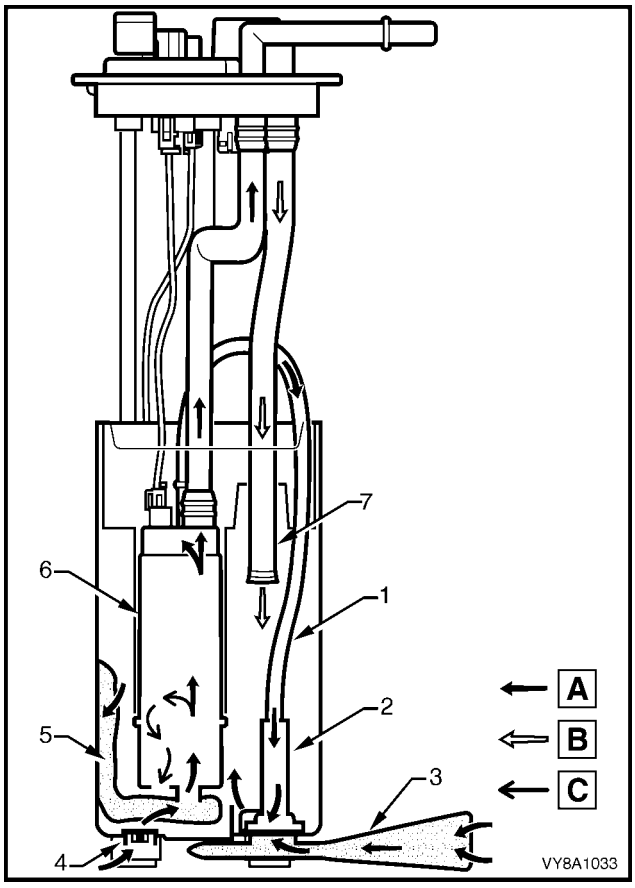


Figure 8A1–4

FUEL PUMP — GEN III V8 ENGINE

Single Turbine Fuel Pump

Figure 8A1–5 details fuel flow through the single turbine fuel pump that is used with the GEN III V8 engine.

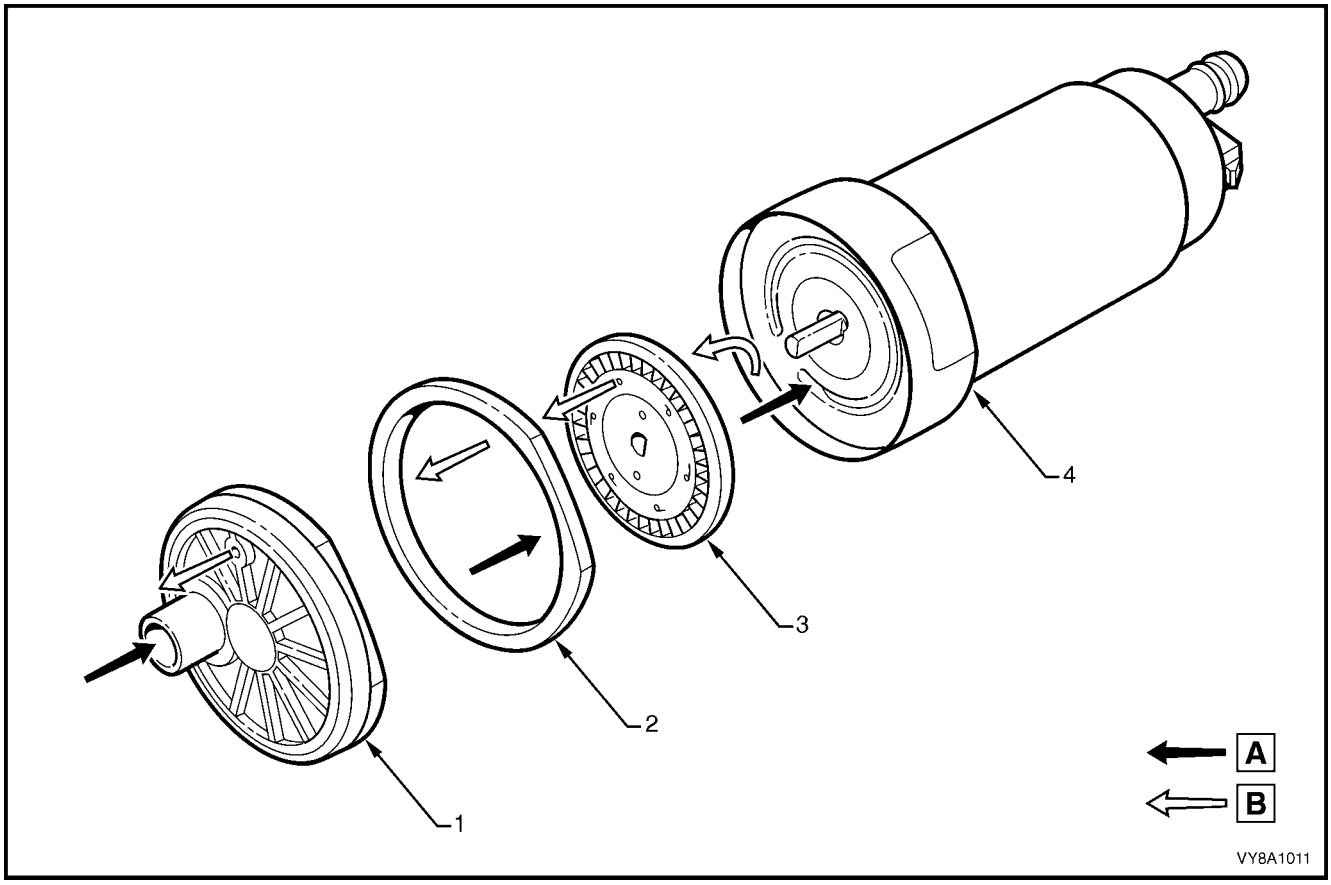


Figure 8A1–5

Legend

A. Fuel
B. Vapour out

1. Inlet Body
2. Impeller Housing
3. Impeller
4. Fuel pump housing

Fuel (A) is drawn into the reservoir from the fuel tank, through the primary umbrella valve (5), and into the fuel pump's impeller, via the internal strainer (4) at the fuel pump (1) inlet. At the impeller, vapour (C) is separated from the fuel. The vapour is ejected out of the fuel pump and into the reservoir via a port next to the fuel pump's inlet.

High-pressure fuel then flows through the end cap, the lower connector and the fuel pump flex pipe. From the flex pipe, fuel then exits the modular fuel pump and sender assembly through the fuel feed fitting and flows on to the externally-mounted fuel filter and the engine.

Pressure is regulated at the downstream end of the engine fuel rail and return fuel (B) not used by the engine is returned to the fuel module via the return fuel line and the return port of the modular fuel cover. The return fuel enters the jet pump standpipe (3) of the reservoir via the return fuel tube.

Vehicle line pressure is maintained by a pressure regulator (2) located within the modular fuel pump and sender assembly.

When the engine is switched off, the reservoir remains full of fuel, due to the action of the primary umbrella valve. At higher fuel levels, fuel from the tank overflow enters the reservoir over the top of the reservoir. Fuel levels in the reservoir are also maintained by returned engine fuel.

Electrical power is supplied to the fuel pump by a connector secured to the cover. An internal harness assembly completes the connection to the pump (not shown).

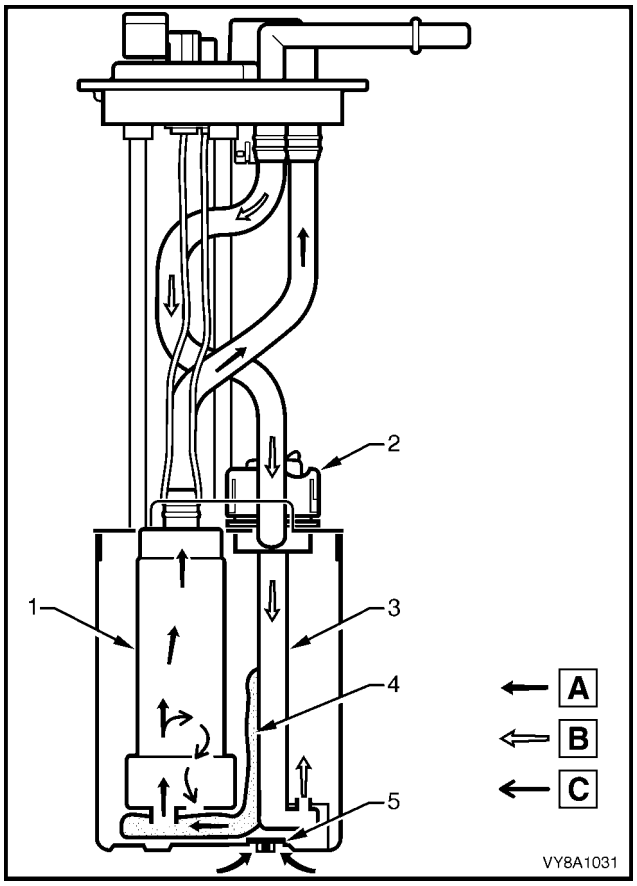


Figure 8A1–6

FUEL PUMP — VEHICLES EXPORTED TO BRAZIL

Dual Turbine Fuel Pump

Figure 8A1–8 details flow through the dual turbine fuel pump that is fitted to the V6 engine exported to Brazil.

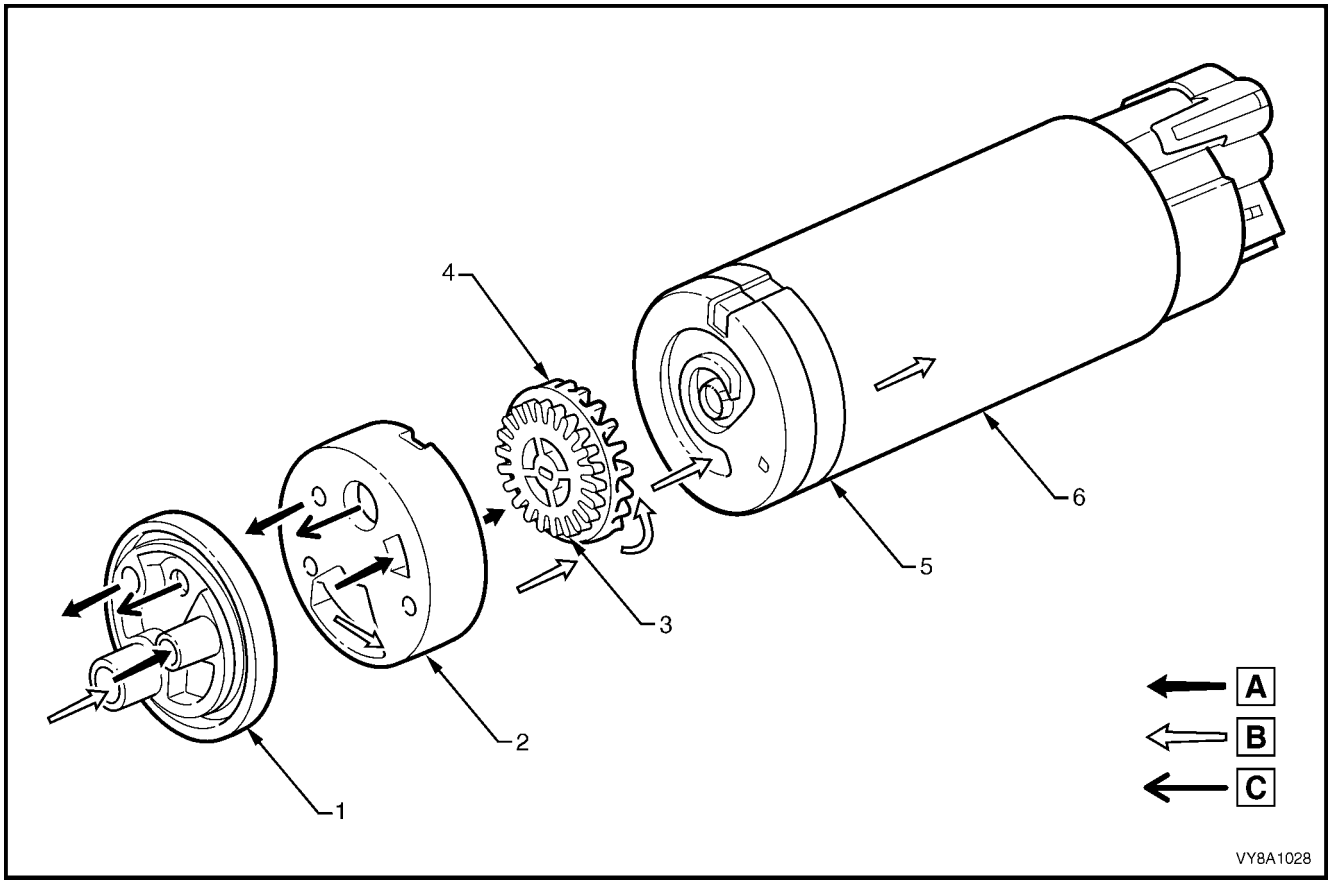


Figure 8A1–7

Legend

A. First Stage Fuel
B. Second and Third Stage Fuel
C. Vapour Out

1. Inlet Body
2. Inlet Housing
3. First Stage Impeller
4. Second Stage Impeller
5. Inlet Plate
6. Third Stage Impeller

Fuel (A) enters the dual stage turbine fuel pump (6) via the external strainer (3) and of the modular fuel pump and sender assembly. In the first stage, the pump separates the vapour (B) from the fuel. First stage fuel is directed to the reservoir filling the reservoir bucket.

Fuel levels in the reservoir are also maintained by return fuel (B) via the return line. Reservoir fuel flow proceeds through the fuel pump strainer (5), bypassing the first stage impeller. Fuel then proceeds to the second impeller and the high-pressure third stage of the impeller pump.

High-pressure fuel then flows through the end cap. Attached to the pump outlet is a diverter that allows the primary fuel volume to flow into the flex pipe and deliver a portion of the flow to the jet pump via an aspirator (1) and the rest to an externally-mounted fuel filter and the engine.

The diverted fuel from the outlet of the fuel pump passes through the jet pump filter (2). This creates a low pressure area at its base, causing the umbrella valve (4) to unseat, drawing cooler fuel into the reservoir area.

When the enigne is switched off, the reservoir remains full of fuel, due to the action of the primary umbrella valves. At higher fuel levels, fuel overflow enters the reservoir over the top of the reservoir.

If the external strainer becomes blocked or restricts fuel entry, the secondary umbrella valve (4) unseats, allowing fuel to enter the reservoir area.

Electrical power is supplied to the fuel pump by a connector secured to the cover. An internal harness assembly completes the connection to the pump (not shown).

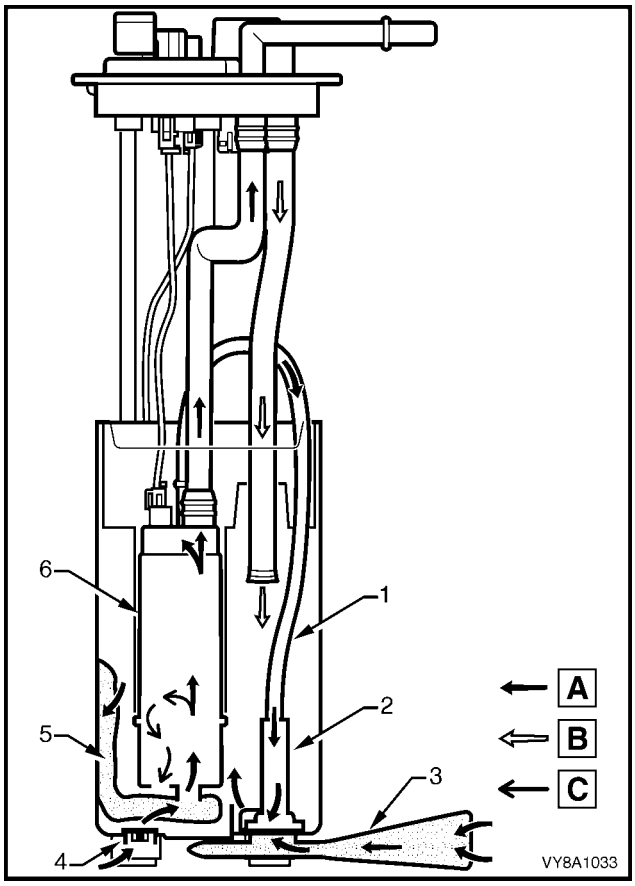


Figure 8A1–8

SINGLE LINE FUEL DELIVERY SYSTEM — GEN III V8 ENGINE

Fuel from the single turbine fuel pump is forced through the fuel pump flex pipe and exits the assembly through the fuel feed output fitting on the cover. Fuel then flows through the fuel filter (5) mounted to a bracket (3) secured to the floor pan. From here, fuel is directed through the fuel filter T-piece (2) and the flexible fuel feed line (1) and on to the engine bay and fuel rail. When fuel line pressure exceeds the pre-determined value of 410 kPa, the fuel pressure regulator in the modular fuel pump and sender assembly opens, allowing excess system pressure to discharge back to the module fuel sender assembly reservoir via the flexible line (4). This process continuously occurs while the pump is operating.

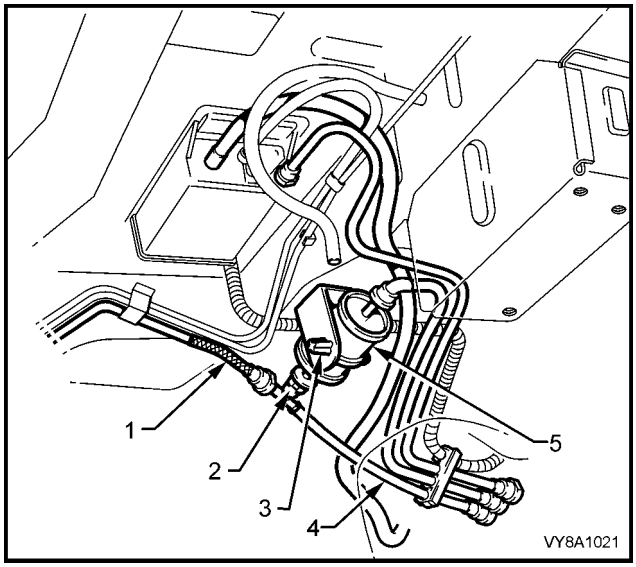


Figure 8A1–9

FUEL PRESSURE REGULATOR — GEN III V8 ENGINE

The fuel pressure regulator is a diaphragm-operated relief valve located in the modular fuel pump and sender assembly of the GEN III V8. On one side of the diaphragm is fuel pump pressure; on the other side atmospheric pressure is combined with mechanical spring pressure. The fuel pressure regulator maintains a controlled pressure at the injectors at all times by regulating the flow into the return line.

NOTE: In vehicles fitted with V6 or V6 Supercharged engines, the fuel pressure regulator is fitted to the engine fuel rail.

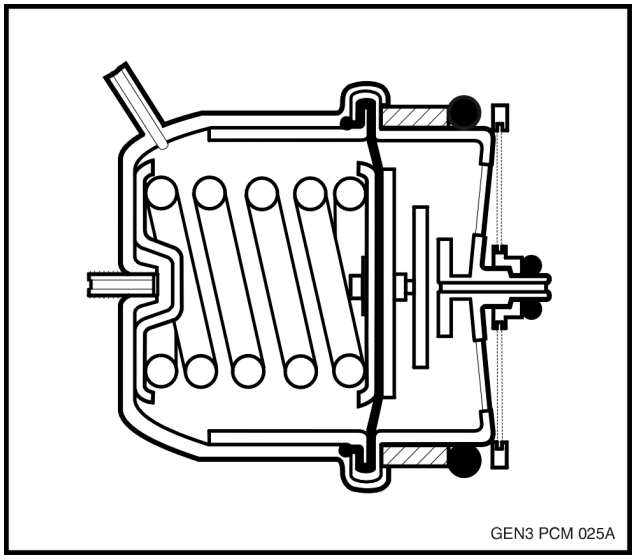


Figure 8A1–10

FUEL GAUGE TANK SENDER UNIT

The ceramic resistor card fuel level sensor assembly consists of a ceramic resistor card (1), wiper arm (2), float arm assembly (3) and a wiring harness (4). The action of these components converts the fuel level in the fuel tank into a variable electrical signal used to drive the fuel gauge in the instrument panel.

The assembly mounting is part of the modular fuel pump and sender assembly moulding on the V6 and GEN III V8 models. On the V6 Supercharged and vehicles exported to Brazil, the assembly is attached to the outside surface of the modular fuel pump and sender assembly, and secured with a retainer. The wiring harness is attached to the fuel level sender and the underside of the top of the unit; it connects the ceramic resistor card to the vehicle wiring harness.

The function of the ceramic resistor card is to vary the resistance, dependent upon the float position and to send that signal via hard wire to the instrument cluster. This resistance signal changes, relative to the wiper contact position on the conductive bars of the ceramic resistor card.

The BCM averages out any slosh variation in the fuel tank. Therefore, fuel tank baffling is not as critical to maintaining accurate gauge readings.

NOTE: The fuel gauge tank sender unit is serviced as a separate component only for vehicles fitted with the V6 Supercharged engine and vehicles exported to Brazil.

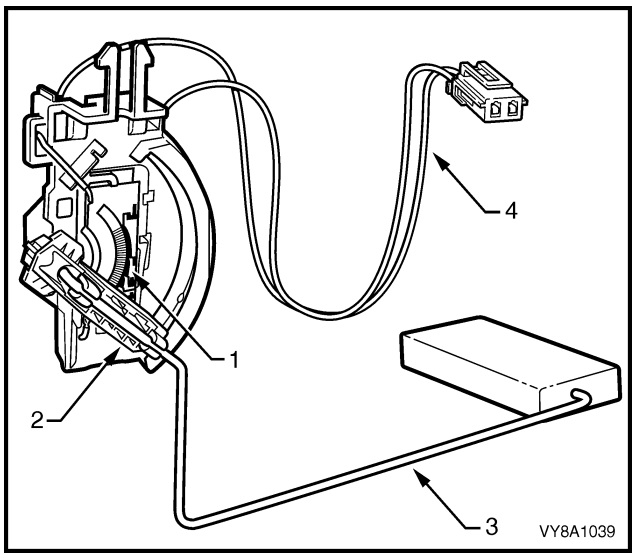


Figure 8A1–11

ROLLOVER VALVE — SEDAN, WAGON AND COUPE

The modular fuel pump and sender assembly fitted to the Sedan, Wagon and Coupe models incorporate a rollover valve in their design. The rollover valve limits vapour venting to the canister using a fixed sized orifice that is normally open (View A). If the vehicle rolls over (View B), the vent line to the canister is safely shut off by the rollover valve, preventing liquid fuel from flooding the canister.

NOTE 1: The rollover valve in Utility models operates in the same manner as the rollover valve fitted to Sedan, Wagon and Coupe models. It is a similar design, but is fitted directly into the tank. Consequently, because the vent fitting on the modular fuel pump and sender assembly is not required in Utility models, it has been blanked off.

NOTE 2: The rollover valve fitted to Sedan, Wagon and Coupe models is not serviceable separately. If it is faulty, the modular fuel pump and sender assembly must be replaced.

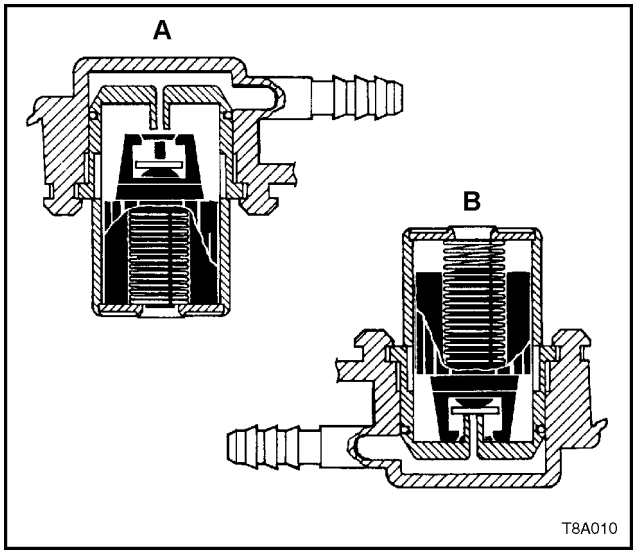


Figure 8A1–12

MODULAR FUEL PUMP AND SENDER ASSEMBLY STRAINERS

Fuel sender assembly strainers are fitted to the inlet side of the fuel pump, underneath the modular fuel pump and sender assembly. The external strainer (1) separates water from fuel and prevents foreign particles from entering the system. In low fuel conditions, the strainer fabric also acts as a wick to draw sufficient fuel to the electric fuel pump inlet. An external strainer screen is only fitted to the V6 Supercharged and vehicles exported to Brazil. If the external strainer screen becomes blocked or restricts fuel entry, the secondary umbrella valve (2) unseats, allowing fuel to enter the reservoir. Contaminants that pass through the fuel pump are filtered out by the in-line fuel filter before reaching the injectors.

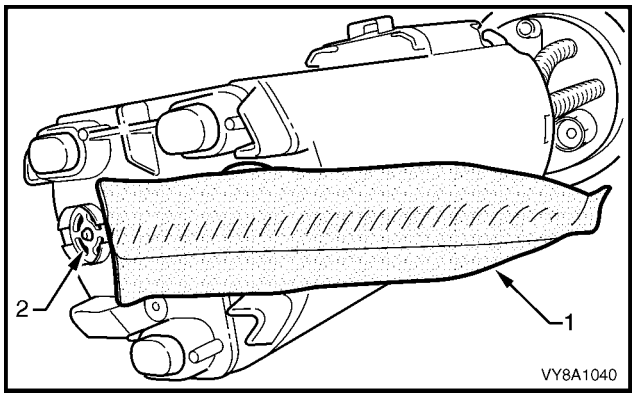


Figure 8A1–13

1.2 FUEL FILLER CAP

The fuel filler cap is a 'SCREW ON' type with a ratcheting feature to prevent over-tightening. When installing the cap, tighten it until a ratcheting (clicking) sound is audible, indicating the cap is tightened properly.

IMPORTANT: If a replacement cap is required, only use the correct all black fuel cap. Using an incorrect cap causes the emission control system to malfunction.

NOTE 1: Vehicles using unleaded fuel have 'UNLEADED FUEL ONLY' embossed into the top of the fuel filler cap.

NOTE 2: The fuel filler door and cap arrangement for the Wagon is shown; the arrangement is similar for the Sedan, Coupe and Utility.

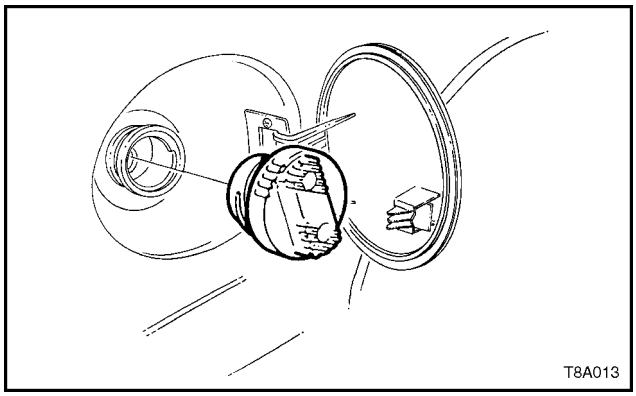


Figure 8A1–14

1.3 SYSTEM COMPONENTS

V6 ENGINE

The Fuel Control System consists of the following components. Refer to Figure 8A1–15 for the V6 engine; the arrangement of the V6 Supercharged engine is similar.

- PCM
- Fuel Tank (1)
- Modular fuel pump and sender assembly (2), containing:
  - Fuel pump assembly
  - Jet pump
- Fuel filter (4)
- Fuel pressure supply line (9)
- Fuel pump relay
- Fuel rails (10)
- Injectors

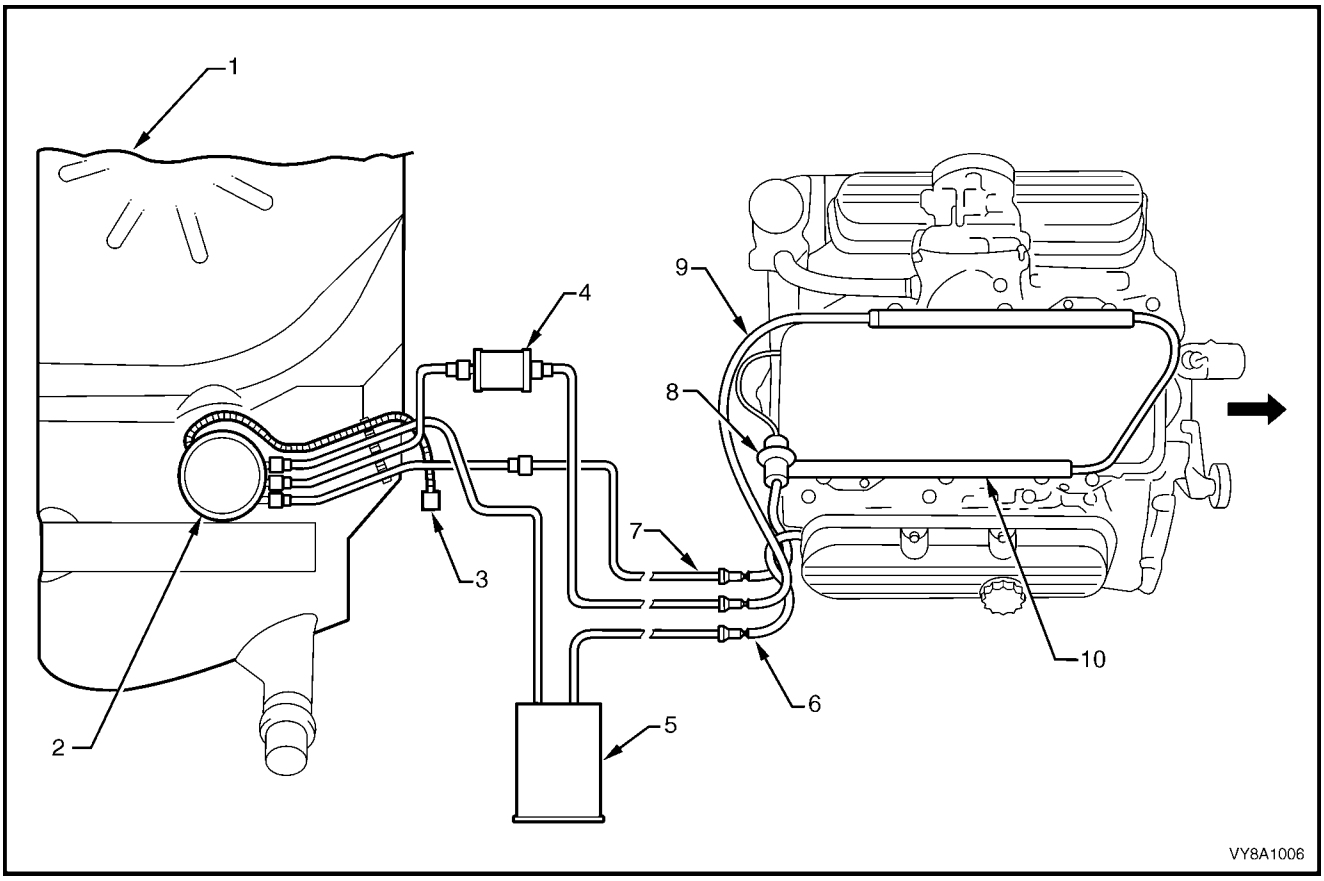


Figure 8A1–15

Legend

1. Fuel Tank
2. Modular Fuel Pump and Sender Assembly
3. Fuel Pump Electrical Connector
4. Fuel Filter
5. Fuel Vapour Canister
6. Fuel Vapour Tube
7. Fuel Return Line
8. Fuel Pressure Regulator
9. Fuel Delivery Line
10. Fuel Rail

GEN III V8 ENGINE

The Fuel Control System consists of the following components, refer Figure 8A–16:

- PCM
- Fuel Tank (1)
- Modular fuel pump and sender assembly (2), containing:
  - Fuel pump assembly
  - Fuel pressure regulator
  - Jet pump
- Fuel filter (3)
- Fuel pressure supply line (8)
- Fuel pump relay
- Fuel rails (6)
- Injectors

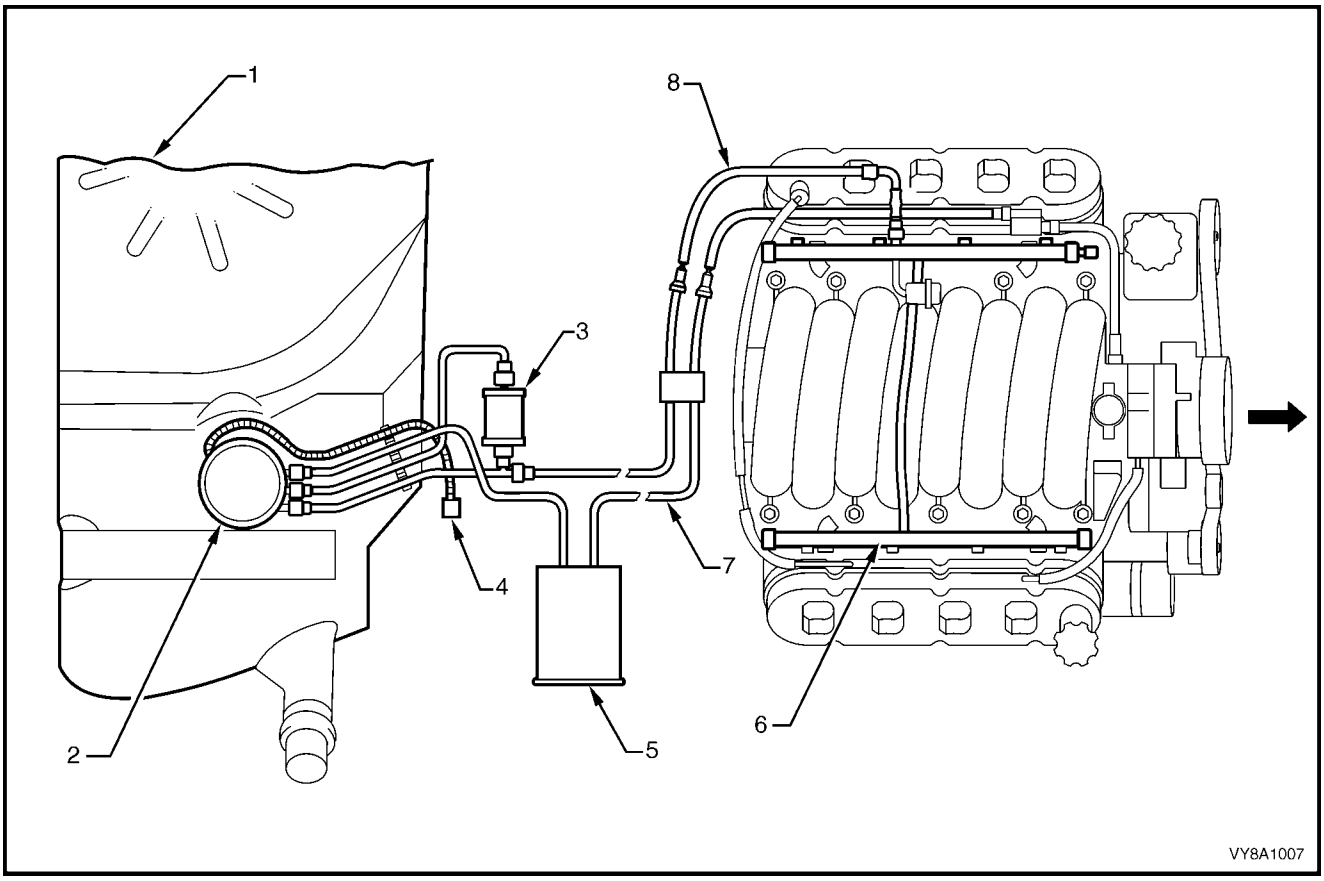


Figure 8A1–16

Legend

1. Fuel Tank
2. Modular Fuel Pump and Sender Assembly Including Pressure Regulator
3. Fuel Filter
4. Fuel Pump Electrical Connector
5. Fuel Vapour Canister
6. Fuel Rail
7. Fuel Vapour Tube
8. Fuel Pressure Supply Line

2. SERVICE OPERATIONS

2.1 FUEL TANK — SEDAN AND WAGON

REMOVE

CAUTION: A depressurised fuel system contains fuel in the fuel filter and fuel lines that can be spilled during service operations. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Depressurise the fuel system. Refer to the following sections in this service information:

a. **Section 6C1–3, 3.1 FUEL PUMP RELAY** for V6.

b. **Section 6C2–3, 3.1 FUEL PUMP RELAY** for V6 Supercharged.

c. **Section 6C3–3, 3.7 FUEL PRESSURE RELIEF PROCEDURE** for GEN III V8.

2. Remove the fuel pump relay R16, refer to **Section 12O, 1.4 RELAYS**.

CAUTION: Never drain or store fuel into an open container, due to the possibility of fire or explosion.

3. Syphon the fuel from the tank, using commercially available equipment.
4. Raise the vehicle, preferably on a hoist, refer to **Section 0A, 1.1 HOIST PAD LOCATIONS**.
5. Remove the right-hand-rear wheelhouse liner, refer to **Section 1A1, 3.2 REAR WHEELHOUSE LINER, EXCEPT UTILITY**.
6. Remove the fuel sender electrical connector (1) from its mounting foot (2) by pulling forward to dislodge the assembled connector from the foot. After releasing, press the locking tab (3) and separate the connector halves (1 and 4).
7. Place a drain tray under the fuel filter area.

CAUTION: Wear safety glasses when using compressed air.

IMPORTANT: Use compressed air to ensure that all dirt and foreign materials are removed from all the fuel connections, before the parts are disconnected.

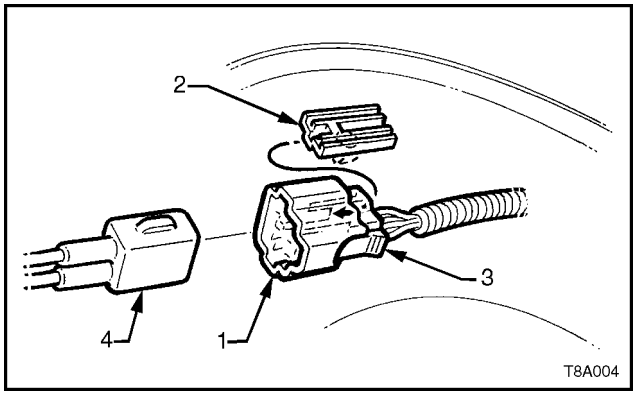


Figure 8A1–17

8. For vehicles fitted with V6 and V6 Supercharged engines:

CAUTION: Fuel can spill from the disconnected filter.

a. If required, remove the fuel filter by disconnecting the fuel feed line connector (6), then press the two barbs on the mounting strap (7) nipple to remove. Support the fuel filter during the entire process, refer to Figure 8A1–18.

b. Disconnect the quick-connect fittings to the vapour canister (1), return line (3) and fuel filter (4), by pushing inwards to release the side tangs of the connector, then pull to disconnect. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs, refer to **2.10 QUICK-CONNECT FITTINGS**. Support the fuel filter during the entire process.

c. Disconnect the vapour canister breather hose at the canister (2).

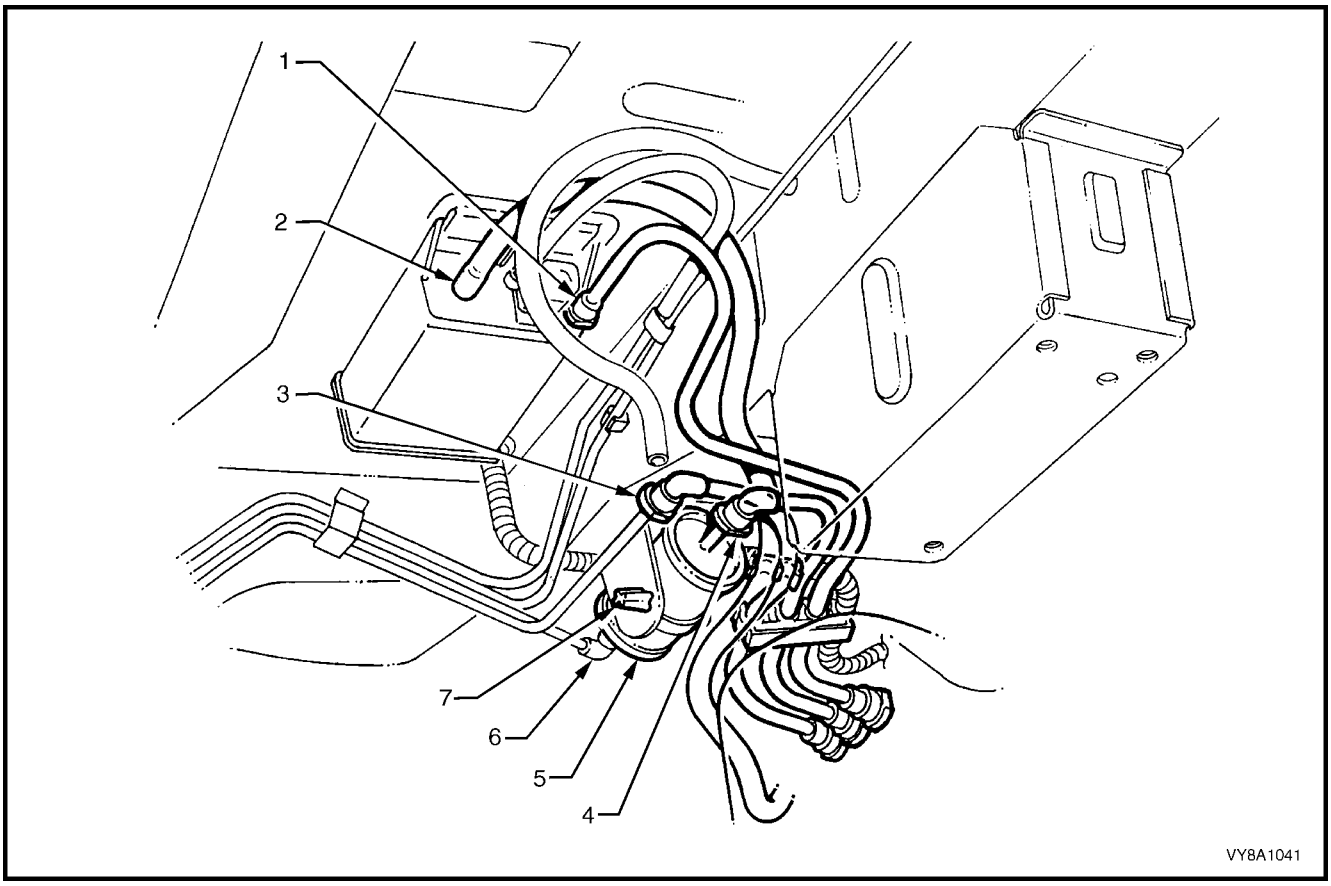


Figure 8A1–18

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Return Line Quick-connect
4. Fuel Feed Line Quick-connect
5. Fuel filter
6. Fuel Feed to Filter Quick-connect
7. Fuel Filter Strap Retaining Tangs

9. For vehicles fitted with GEN III V8 engines:

CAUTION: Fuel can spill from the disconnected filter.

a. If required, remove the fuel filter (7) by disconnecting the fuel feed line connector (8). Pess the fuel filter strap tangs (5) on the retainer strap, and then remove the fuel filter from the bracket. Finally, disconnect the fuel filter T-piece connector (4). Support the fuel filter during the entire process, refer to Figure 8A1–19.

b. Disconnect the quick-connect fittings to the vapour canister (1), by pushing inwards to release the seal pressure, press the side tangs of the connector, then pull to disconnect. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs, refer to **2.10 QUICK-CONNECT FITTINGS**. Support the fuel filter during the entire process.

c. Disconnect the filler breather hose from the canister (2).

d. Disconnect the quick-connect fitting (3) at the flexible pipe and filter T-piece, by supporting the quick-connect fitting while pulling the fuel tank feed line from the fitting.

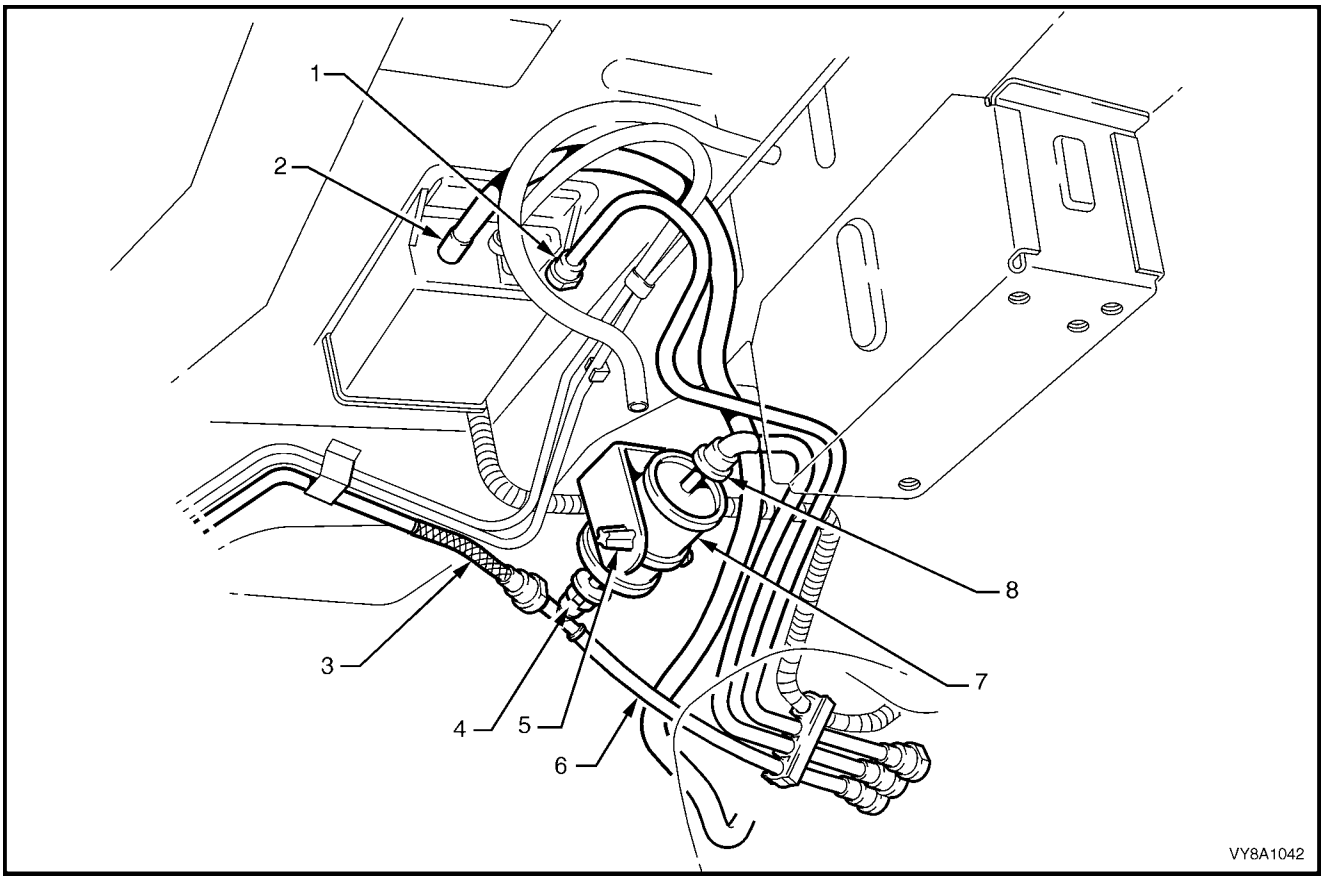


Figure 8A1–19

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Feed to Engine Flexible Line
4. Fuel Filter T-piece Quick-connect
5. Fuel Filter Strap Retaining Tang
6. Fuel Return Line to Fuel Tank
7. Fuel Filter
8. Fuel Feed Line Quick-connect

10. Referring to Figure 8A1–20, disconnect the earth strap from the spade connector (9, in Views A and E), located under the front right-hand strap-mounting bolt (4, in View A) of the right-hand tank support strap (3, in View A).
11. While supporting the fuel tank in the centre, remove the fuel tank support straps as follows:
    a. Remove the centre strap (2, View D) by removing the rear retaining nut (5) and washer, and then unhook the strap from the front support (View C).
    b. Remove the bolt at the front and unhook the strap from the rear support (Views A and B). Then remove the right-hand strap (3).
    c. Remove the left-hand strap (1) by unscrewing the nuts and washers from each end of the strap (Views C and D).
12. Lower the left-hand side of the fuel tank from the vehicle to release the fuel filler neck from the body opening. Then continue to lower the entire fuel tank.

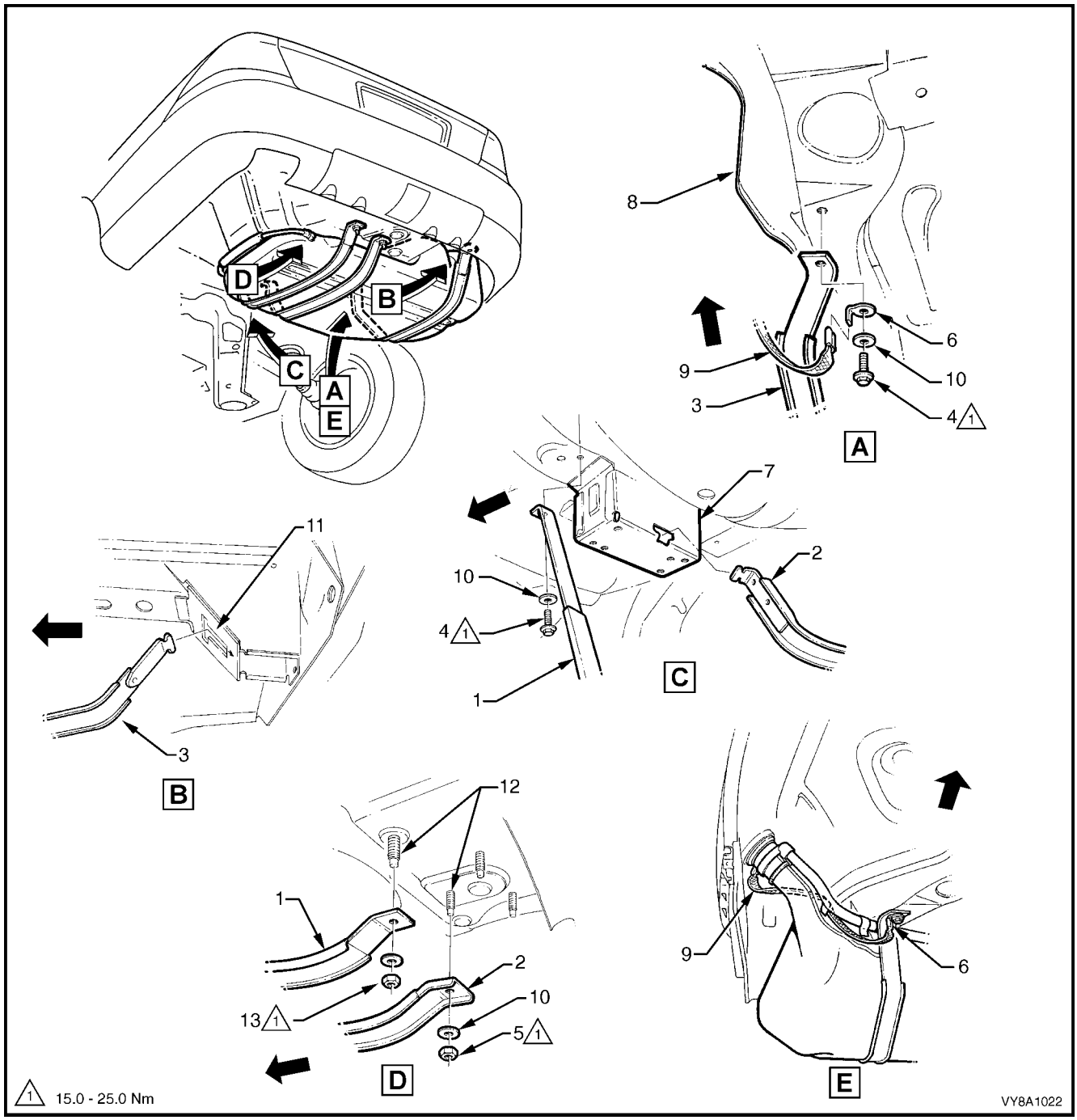


Figure 8A1–20

Legend

1. Left-hand Fuel Tank Mounting Strap
2. Centre Fuel Tank Mounting Strap
3. Right-hand Fuel Tank Mounting Strap
4. Left-hand Strap Front
5. Centre Strap Rear Attaching Bolt
6. Earth Strap Spade Connector
7. Front Support
8. Rear Longitudinal Extension
9. Filler Neck Earth
10. Tank Strap Support Washer
11. Rear Support
12. Fuel Tank Reinforcement Studs
13. Left-hand Strap Rear Attachment

REINSTALL

Reinstallation is the reverse of the removal procedure, noting the following:

1. Check that the insulation has not become dislodged from the top of the tank.
2. Lift the fuel tank into position reinserting the fuel filler neck into the body opening, with the insulator attached. Raise the remainder of the fuel tank into place.
3. Referring to Figure 8A1–20, fit the support straps in the following order:
   a. Loosely reattach the two outer straps (1 and 3).
   b. Check that the filler neck seal is correctly located in the body opening.
   c. While pushing the fuel tank firmly to the right-hand side, tighten the rear nut of the right-hand strap (View D).
   d. Tighten the right-hand strap front mounting bolt (4, in View A) of the strap (3). Ensure that the earth strap spade connector is fitted.
   e. Hook the centre strap (2) into the front retainer (View C) and replace the nut and washer (5, in View D).
4. Tighten all strap fasteners to the correct torque specification.

FUEL TANK MOUNTING STRAP NUTS AND BOLTS TORQUE SPECIFICATION	15.0 – 25.0 Nm

5. Assemble the electrical connector, ensuring that both locking tabs are in place. Then insert the assembled electrical connector into its mounting foot. Push to engage the locking tabs.

IMPORTANT: Install the fuel filter with the flow arrow on its body pointing in the same direction as the fuel flow to the front of the vehicle.

6. For vehicles fitted with V6 or V6 Supercharged engines, install the disconnected fittings to the fuel filter, canister and return line. Refer to Figure 8A1–18 for the correct component routeings using the following assembly sequence:
   a. Canister vent hose to canister (2).
   b. Fuel vapour return line to canister (1).
   c. Fuel tank vent line to canister.
   d. Fuel return line to brake and fuel pipe harness assembly (3).
   e. Fuel lines (4 and 6) to the fuel filter (5).
   f. If it was removed, connect the fuel filter and strap assembly (7) to the filter-mounting bracket.
7. For vehicles fitted with a GEN III V8 engine, install the disconnected fittings to the fuel filter, canister and return line. Refer to Figure 8A1–19 for the correct component routeings using the following assembly sequence:
   a. Canister vent hose to canister (2).
   b. Fuel tank vent line to canister (1).
   c. Fuel feed line to flexible pipe quick-connect (3).
   d. Filter to T-piece quick-connect (4), then filter strap retainer (5) to filter bracket.
   e. Fuel filter to fuel feed line quick-connect (8).
8. Install the right-hand rear wheelhouse liner, tightening the mounting screws to secure.
9. Before starting the vehicle, perform a fuel system leak test, as detailed in Sections:
   a. **Section 6C1-3, 3.6 LEAK TESTING** for V6.
   b. **Section 6C2-3, 3.6 FUEL FILTER** for V6 Supercharged.
   c. **Section 6C3-3, 3.20 FUEL SYSTEM LEAK TEST** for GEN III V8.

2.2 FUEL TANK – COUPE

REMOVE

CAUTION: A depressurised fuel system contains fuel in the fuel filter and fuel lines that can be spilled during service operations. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Depressurise the fuel system. Refer to:
   a. **Section 6C1-3, 3.1 FUEL PUMP RELAY** for V6.
   b. **Section 6C2-3, 3.1 FUEL PUMP RELAY** for V6 Supercharged.
   c. **Section 6C3-3, 3.7 FUEL PRESSURE RELIEF PROCEDURE** for GEN III V8.
2. Remove relay fuel pump relay R16, refer to **Section 12O, 1.4 RELAYS**.

CAUTION: Never drain or store fuel into an open container, due to the possibility of fire or explosion.

3. Syphon the fuel from the tank, using commercially available equipment.
4. Raise the vehicle, preferably on a hoist, refer to **Section 0A, 1.1 HOIST PAD LOCATIONS**.
5. Remove the right-hand rear wheelhouse liner, refer to **Section 1A1, 3.2 REAR WHEELHOUSE LINER, EXCEPT UTILITY**.
6. Remove the fuel sender electrical connector (1) from its mounting foot (2) by pulling forward to dislodge the assembled connector from the foot. Once released, press the locking tab (3) and separate the connector halves (1 and 4).
7. Place a drain tray under the fuel filter area.

CAUTION: Wear safety glasses when using compressed air.

IMPORTANT: Use compressed air to ensure that all dirt and foreign materials are removed from all the fuel connections, before the parts are disconnected.

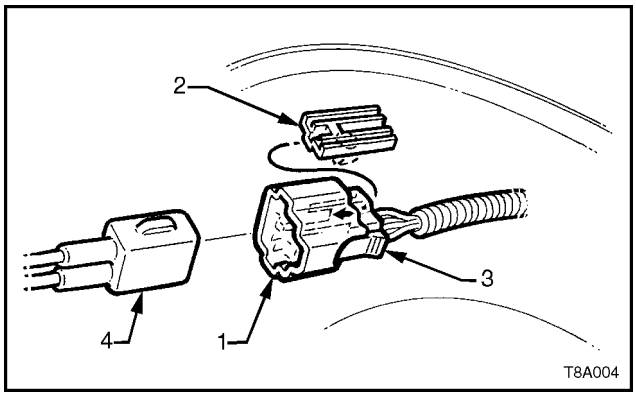


Figure 8A1–21

8. For vehicles fitted with V6 and V6 Supercharged engines:

CAUTION: Fuel can spill from the disconnected filter.

   a. If required, remove the fuel filter by disconnecting the fuel feed line connector (6), then press the two barbs on the mounting strap (7) nipple to remove. Support the fuel filter during the entire process, refer to Figure 8A1–22.
   b. Disconnect the quick-connect fittings to the vapour canister (1), return line (3) and fuel filter (4), by pushing inwards to release the side tangs of the connector, then pull to disconnect. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs, refer to **2.10 QUICK-CONNECT FITTINGS**. Support the fuel filter during the entire process.
   c. Disconnect the vapour canister breather hose at the canister (2).

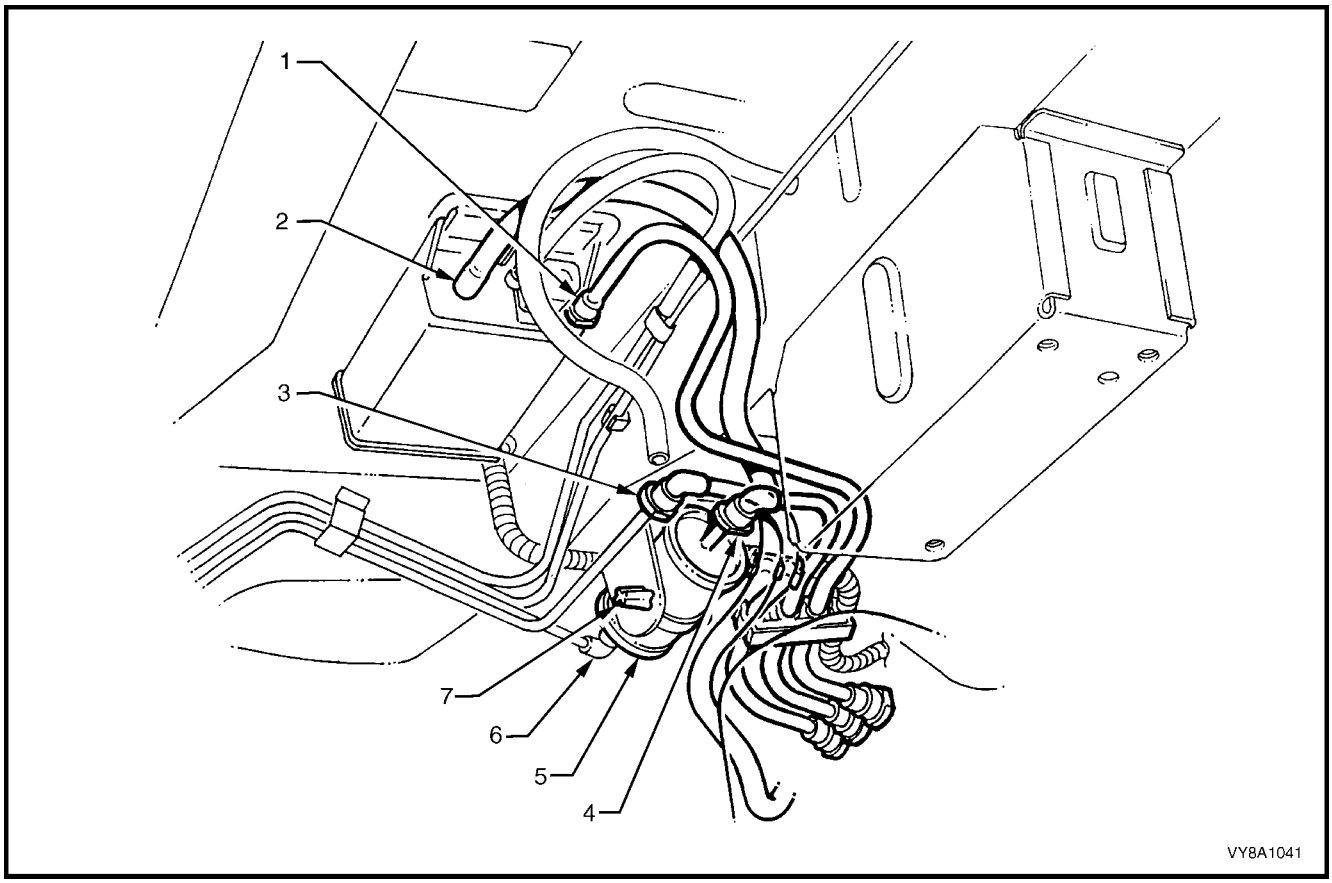


Figure 8A1–22

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Return Line Quick-connect
4. Fuel Feed Line Quick-connect
5. Fuel Filter
6. Fuel Feed to Filter Quick-connect
7. Fuel Filter Strap Retaining Tang

9. For vehicles fitted with GEN III V8 engines:

CAUTION: Fuel can spill from the disconnected filter.

a. If required, remove the fuel filter (7) by disconnecting the fuel feed line connector (8). Press the fuel filter strap tangs (5) on the retainer strap, then remove the fuel filter from the bracket. Finally, disconnect the fuel filter T-piece connector (4). Support the fuel filter during the entire process, refer to Figure 8A1–23.

b. Disconnect the quick-connect fittings to the vapour canister (1), by pushing inwards to release the seal pressure, press the side tangs of the connector, then pull to disconnect. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs, refer to **2.10 QUICK-CONNECT FITTINGS**. Support the fuel filter during the entire process.

c. Disconnect the filler breather hose from the canister (2).

d. Disconnect the quick-connect fitting (3) at the flexible pipe and filter T-piece, by supporting the quick-connect fitting while pulling the fuel tank feed line from the fitting.

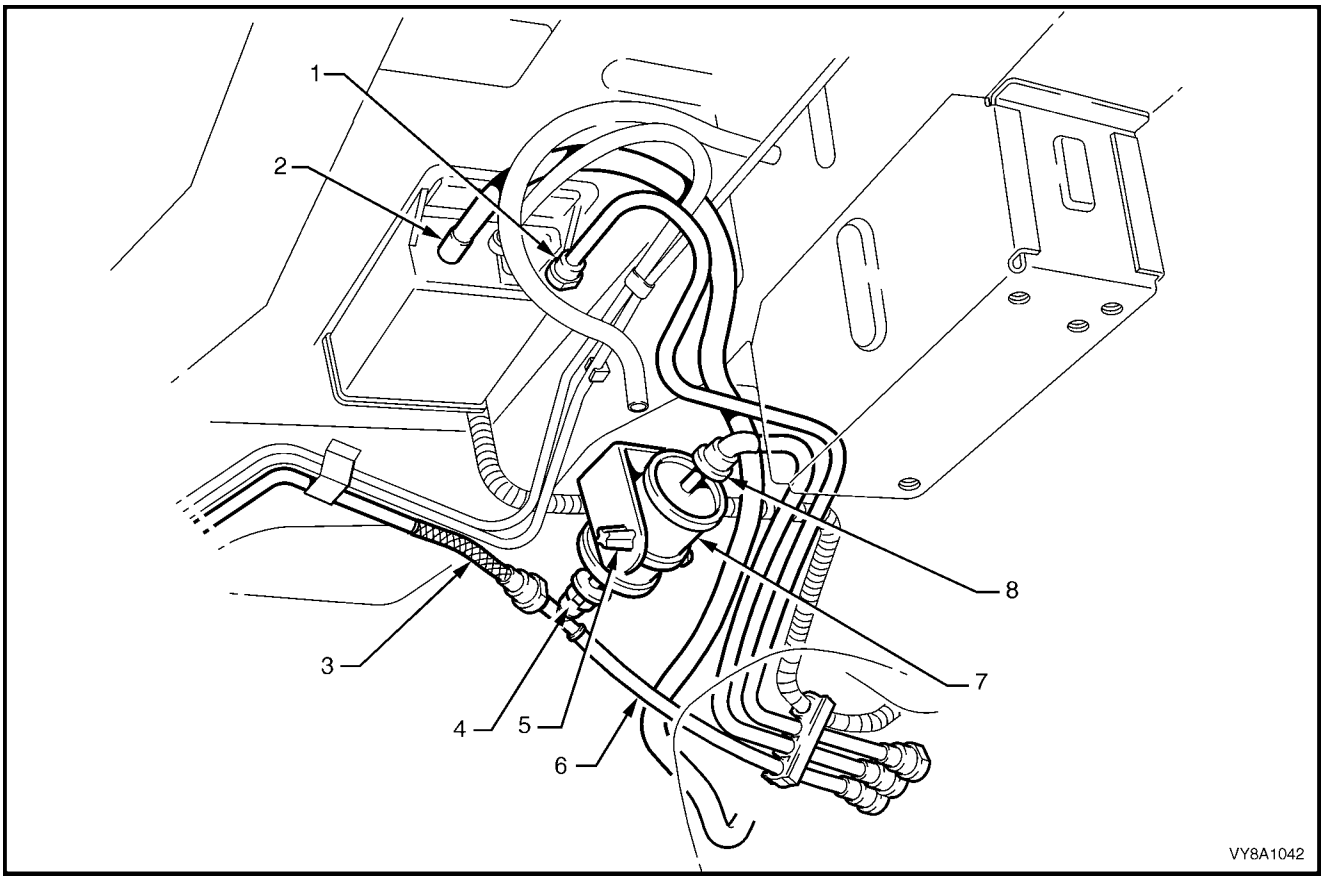


Figure 8A1–23

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Feed to Engine Flexible Line
4. Fuel Filter T-piece Quick-connect
5. Fuel Filter Strap Retaining Tang
6. Fuel Return Line to Fuel Tank
7. Fuel Filter
8. Fuel Feed Line Quick-connect

10. Referring to Figure 8A1–24, disconnect the earth strap from the spade connector (9, in Views A and E) located under the right-hand strap-mounting bolt (4, in View A) of the right-hand tank support strap (3, in View A).
11. While supporting the fuel tank in the centre, remove the fuel tank support straps as follows:
    a. Remove the centre strap (2, in View D) by removing the rear retaining nut (5) and washer (10), then unhook the strap from the front support (View C).
    b. Remove the bolts at the front and rear of the right-hand strap (3, in View B). Remove the right-hand strap.
    c. Remove the bolts at the front and rear of the left-hand strap (1, in View C). Remove the left-hand strap.
    d. Lower the fuel tank from the vehicle, left-hand side first, to release the fuel filler neck from the body opening.

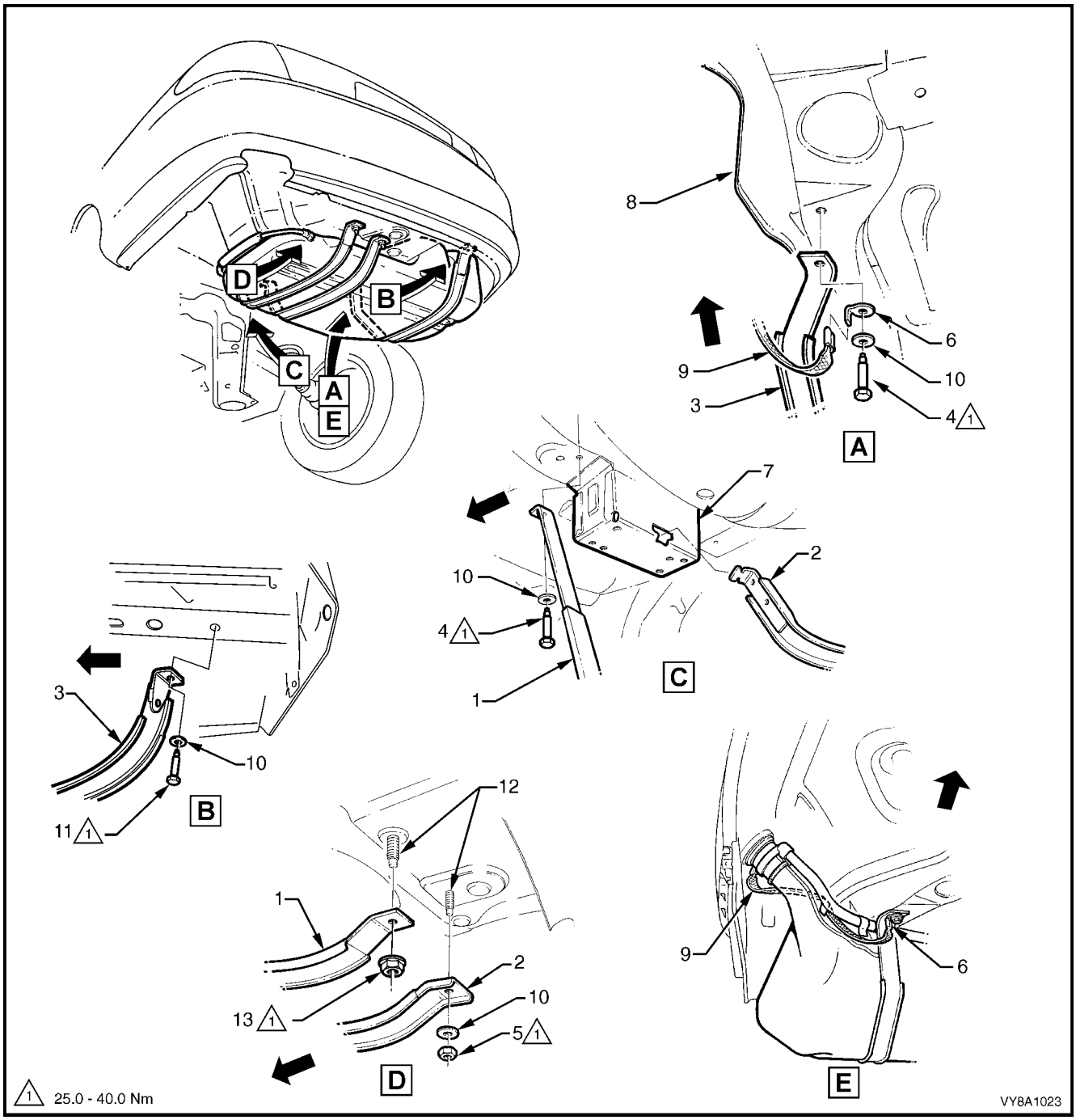


Figure 8A1–24

Legend

1. Left-hand Fuel Tank Mounting Strap
2. Centre Fuel Tank Mounting Strap
3. Right-hand Fuel Tank Mounting Strap
4. Left-hand Strap Front Attaching Bolt
5. Centre Strap Rear Attaching Nut
6. Earth Strap Spade Connector
7. Front Support
8. Right-hand Rear Longitudinal Extension
9. Filler Neck Earth Strap
10. Fuel Tank Strap Washer
11. Right-hand Strap Rear Attaching Bolt
12. Fuel Tank Reinforcement Studs
13. Left-hand Strap Rear Attaching Nut

REINSTALL

Reinstallation is the reverse of the removal procedure noting the following:

1. Check that the insulation has not become dislodged from the top of the tank.
2. Lift the fuel tank into position reinserting the fuel filler neck into the body opening, with the insulator attached. Then raise the remainder of the fuel tank into place.
3. Referring to Figure 8A1–24, fit the support straps in the following order:
   a. Loosely reattach straps 1 and 3.
   b. Check that the filler neck seal is correctly located in the body opening.
   c. While pushing the fuel tank firmly to the right-hand side, tighten the front mounting bolt and rear nut for the left-hand fuel tank mounting strap.
   d. Ensuring that the earth strap spade connector is installed, tighten the front bolt for the right-hand fuel tank mounting strap.
4. Hook the centre fuel tank mounting strap into the front retainer and install the retaining nut and washer.
5. Tighten all strap fasteners to the correct torque specification.

FUEL TANK MOUNTING STRAP ATTACHING BOLTS AND NUTS TORQUE SPECIFICATION	25.0 – 40.0 Nm

6. Assemble the electrical connector, ensuring that both locking tabs are in place. Engage the assembled connector to its mounting foot and push rearwards to engage the locking tab.

IMPORTANT: Install the fuel filter with the flow arrow on its body pointing in the same direction as the fuel flow to the front of the vehicle.

7. For vehicles fitted with V6 and V6 Supercharged engines, install the disconnected fittings to the fuel filter, canister and return line, correctly routeing components as shown in Figure 8A1–22, using the following assembly sequence:
   a. Canister vent hose to canister (2).
   b. Fuel vapour return line to canister (1).
   c. Fuel tank vent line to canister.
   d. Fuel return line to brake and fuel pipe harness assembly (3).
   e. Fuel lines (4 and 6) to the fuel filter.
   f. Fuel filter (5) and strap assembly (7) to the filter-mounting bracket.
8. For vehicles fitted with the GEN III V8 engine, install the disconnected fittings to the fuel filter, canister and return line, routeing correctly, as shown in Figure 8A1–23, using the following sequence:
   a. Canister vent hose to canister (2).
   b. Fuel tank vent line to canister.
   c. Fuel feed line to flexible pipe quick-connect (3).
   d. Filter to T-piece quick-connect (4), then filter strap retainer (5) to filter bracket.
   e. Fuel filter to fuel feed line quick-connect (8).
9. Install the right-hand wheelhouse liner, tightening the mounting screws to secure.
10. Before starting the vehicle, perform a fuel system leak test. To perform the leak test refer to the following Sections:
    a. **Section 6C1–3, 3.6 LEAK TESTING** for V6.
    b. **Section 6C2–3, 3.6 FUEL FILTER** for V6 Supercharged.
    c. **Section 6C3–3, 3.20 FUEL SYSTEM LEAK TEST** for GEN III V8.

2.3 FUEL TANK – UTILITY

REMOVE

CAUTION: A depressurised fuel system contains fuel in the fuel filter and fuel lines that can be spilled during service operations. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Depressurise the fuel system, refer to:
   a. **Section 6C1-3, 3.1 FUEL PUMP RELAY** for V6.
   b. **Section 6C3-3, 3.7 FUEL PRESSURE RELIEF PROCEDURE** for GEN III V8.
2. Remove the fuel pump relay R16, refer to **Section 12O, 1.4 RELAYS**.
3. Remove the load floor front panel assembly, refer to **Section 1B, 2.7 LOAD FLOOR FRONT PANEL ASSEMBLY**.
4. Remove the screws (2) securing the load compartment side panel inner front cover (1), refer to Figure 8A1–25. If necessary also remove the LPG filler and service lines, refer to **Section 8A2 LPG SYSTEM**.
5. Disconnect the modular fuel pump and sender harness connector (4).
6. Tag the fuel feed (3) and return (6) line connections located on top of the fuel tank.

NOTE: For identification purposes, the fuel return hose is tagged with a white band near the connector at the top of the fuel tank.

7. Tag the vent hose (5) on top of the fuel tank and disconnect by pulling the vent hose from the fuel tank rollover valve vent fitting.
8. Disengage the fuel return line (6) and the fuel feed line (3) quick-connect fittings using special tool AU533, refer to **2.10 QUICK-CONNECT FITTINGS**.
9. Remove the modular fuel pump and sender assembly, refer to **2.7 MODULAR FUEL PUMP AND SENDER ASSEMBLY – UTILITY**. Drain the entire contents of the fuel tank by pumping or syphoning the fuel through the sender assembly hole in the fuel tank using commercially available equipment.

NOTE: A permanent floodgate restriction in the lower fuel filler neck prevents the fuel tank from being drained through the filler aperture.

CAUTION: Fuel vapour remains in the tank even when completely empty. Seal all the openings in the fuel tank using a suitable plastic plug. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

10. Remove the four nuts (7) and rubber isolators (9), then remove the tank by manipulating the filler neck free of the filler neck grommet and past the inner quarter panel.

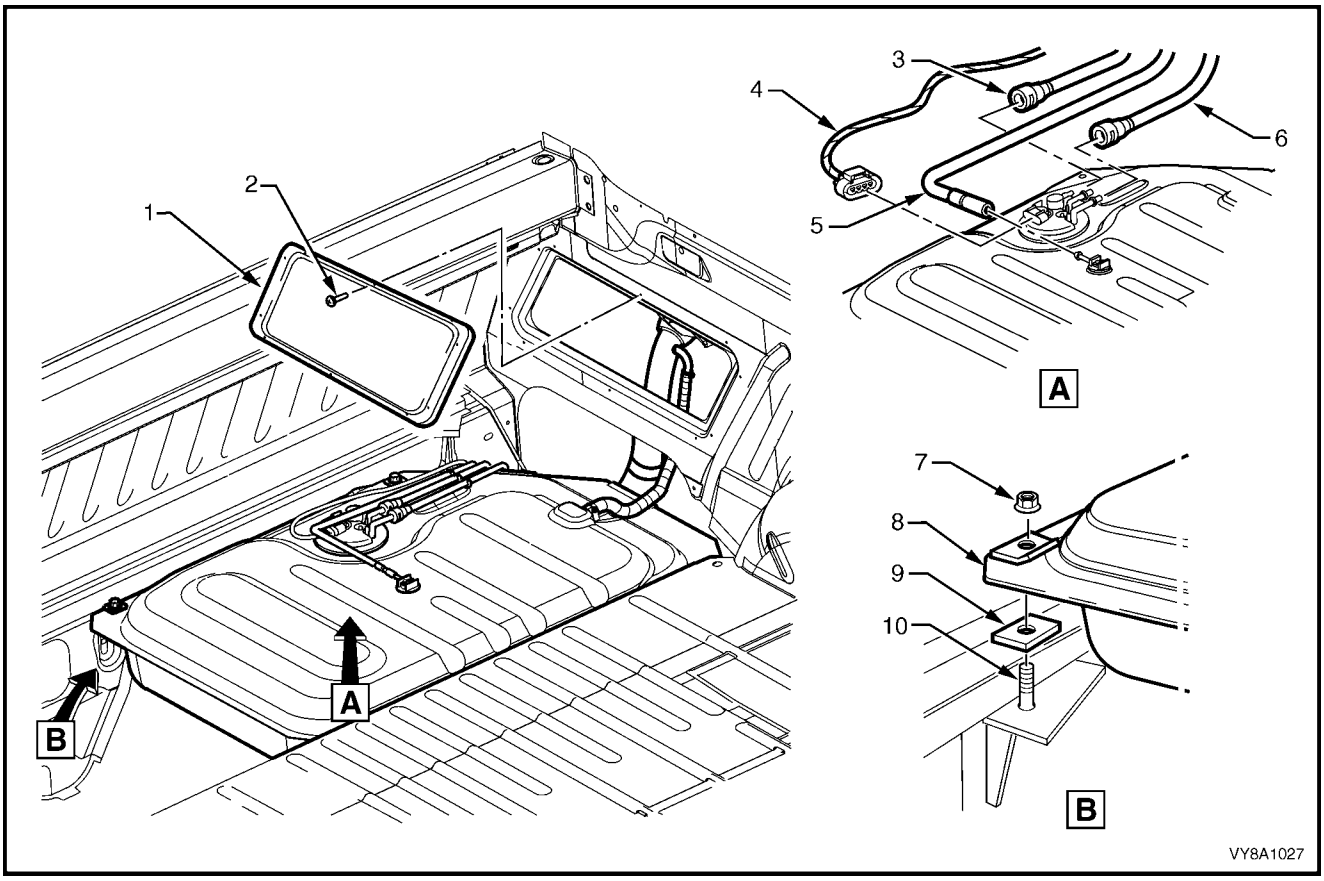


Figure 8A1–25

Legend

1. Side Panel Inner Front Cover
2. Side Panel Screw (10 Places)
3. Fuel Feed Line
4. Fuel Sender Harness Connector
5. Vent Hose
6. Fuel Return Line
7. Nut
8. Fuel Tank
9. Fuel Tank Isolator Rubber
10. Stud

REINSTALL

The installation procedure for the fuel tank is the reverse of the removal procedure, noting the following:

1. The connections for the fuel tank vent hose are shown in View A in Figure 8A1–25. Tighten all mounting nuts to the correct torque specification.

FUEL TANK MOUNTING NUT TORQUE SPECIFICATION	25.0 – 30.0 Nm

2.4 FUEL FILTER — V6 AND V6 SUPERCHARGED ENGINE

REPLACE

IMPORTANT: This procedure MUST be followed, both in the sequence of removal and installation of a replacement filter. Failure to observe these instructions will probably result in permanent damage to the flexible line, resulting in unnecessary parts replacement and expense.

NOTE: For details on disconnecting the quick-connect fittings from the fuel filter, refer to **2.10 QUICK-CONNECT FITTINGS.**

CAUTION: A depressurised fuel system contains fuel in the fuel filter and fuel lines that can be spilled during service operations. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Depressurise the fuel system. Refer to:
   a. **Section 6C1-3, 3.1 FUEL PUMP RELAY** for V6.
   b. **Section 6C2-3, 3.1 FUEL PUMP RELAY** for V6 Supercharged.

CAUTION: Wear safety glasses when using compressed air.

2. Use compressed air to ensure that all dirt and foreign materials are removed from all fuel connections before the parts are disconnected.
3. Push the connector towards the filter and press the retainers together to disconnect the fuel feed flexible line connector (4) from the fuel filter (5), refer to Figure 8A1–26. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs. Support the fuel filter during the entire process.
4. Press the fuel filter strap tangs (7) on the retainer strap, then remove the filter from the bracket.
5. Disconnect the fuel feed pipe (6) on the other end of the fuel filter. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs.
6. Remove the fuel filter from the vehicle.
7. Attach the support strap onto a replacement fuel filter and, while supporting the fuel feed pipe, push the fuel filter into the quick-connect until fully seated.
8. Install the filter strap retainer to the bracket. Install the quick-connect to the remaining end of the filter.
9. Check each connector by firmly tugging on each one to ensure it is in the locked position.
10. Before starting the vehicle, perform a fuel system leak test, as detailed in:

a. **Section 6C1–3, 3.6 LEAK TESTING** for V6.

b. **Section 6C2–3, 3.6 FUEL FILTER** for V6 Supercharged.

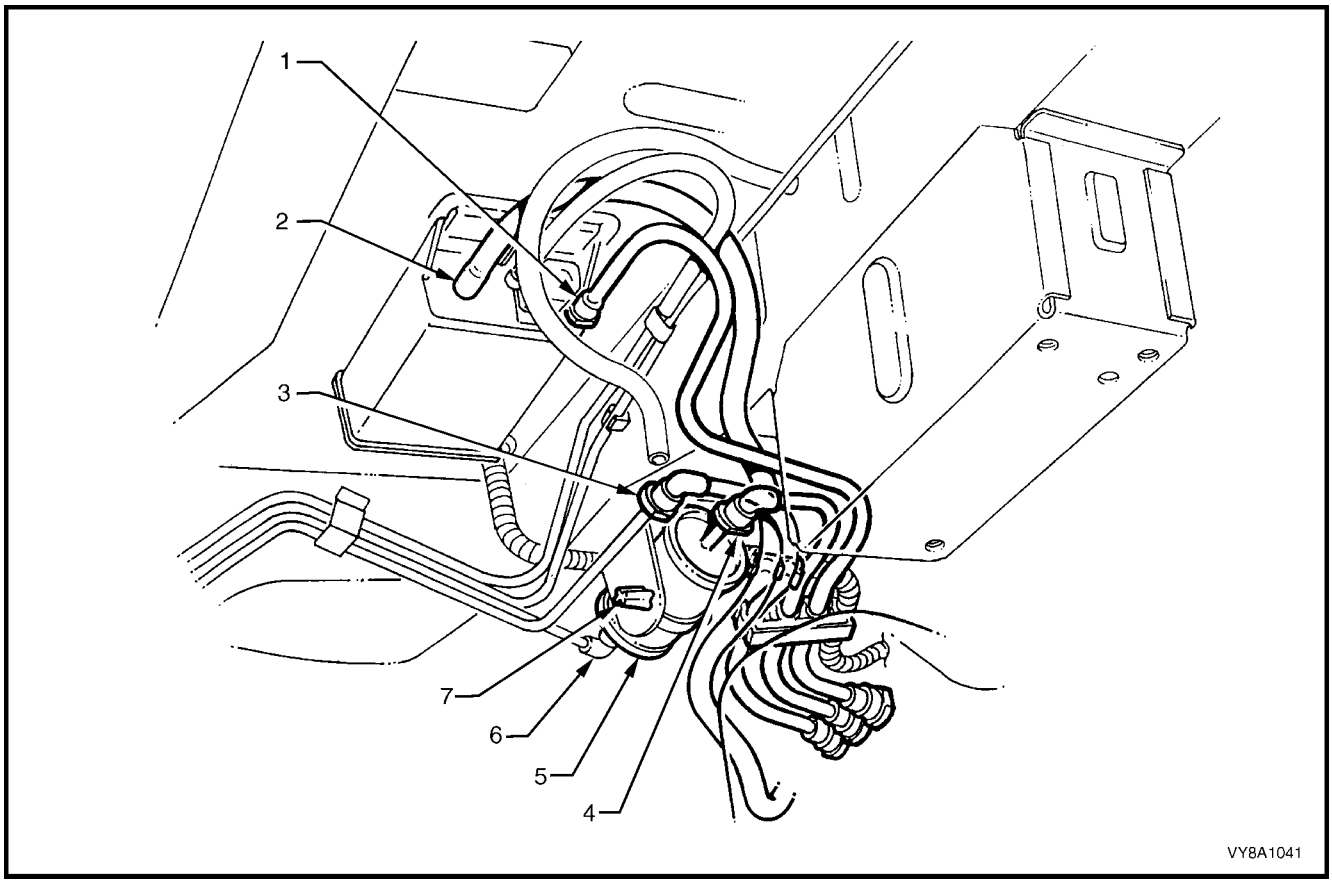


Figure 8A1–26

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Return Line Quick-connect
4. Fuel Feed Line Quick-connect
5. Fuel Filter
6. Fuel Feed to Filter Quick-connect
7. Fuel Filter Strap Retaining Tang

2.5 FUEL FILTER — GEN III V8 ENGINE

REPLACE

CAUTION: A depressurised fuel system contains fuel in the fuel filter and fuel lines that can be spilled during service operations. Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

IMPORTANT: This procedure MUST be followed, both in the sequence of removal and installation of a replacement filter. Failure to observe these instructions will probably result in permanent damage to the flexible line, resulting in unnecessary parts replacement and expense.

NOTE: For details on disconnecting the quick-connect fittings from the fuel filter refer to **2.10 QUICK-CONNECT FITTINGS**.

1. Depressurise the fuel system refer to **Section 6C3-3, 3.7 FUEL PRESSURE RELIEF PROCEDURE** for GEN III V8.

CAUTION: Wear safety glasses when using compressed air.

2. Use compressed air to ensure that all dirt and foreign materials are removed from all fuel connections before the parts are disconnected.
3. Push the connector towards the filter and press the retainers together to disconnect the fuel feed line connector (8) from the fuel filter (7), refer to Figure 8A1–27. Alternatively, use special tool AU533 to assist in pressing the connector locking tangs. Support the fuel filter during the entire process.
4. Press the fuel filter strap retaining tangs (5) on the retainer strap, then remove the filter from the bracket.
5. To avoid permanent damage to the flexible line at the T-piece end of the filter, support the T-piece then press the filter into it while releasing the quick-connect fitting (4). Alternatively, fit the special tool number AU533 over the T-piece connector to press the connector locking tangs.
6. Remove the fuel filter from the vehicle.
7. Attach the support strap onto a replacement fuel filter and, while supporting the T-piece, push the fuel filter (7) into the T-piece quick-connect until fully seated.
8. Install the filter strap retainer to the bracket. Install the quick-connect to the remaining end of the filter.
9. Check each connector by firmly tugging on each one to ensure it is in the locked position.
10. Before starting the vehicle, perform a fuel system leak test, refer to **Section 6C3-3, 3.20 FUEL SYSTEM LEAK TEST** for GEN III V8.

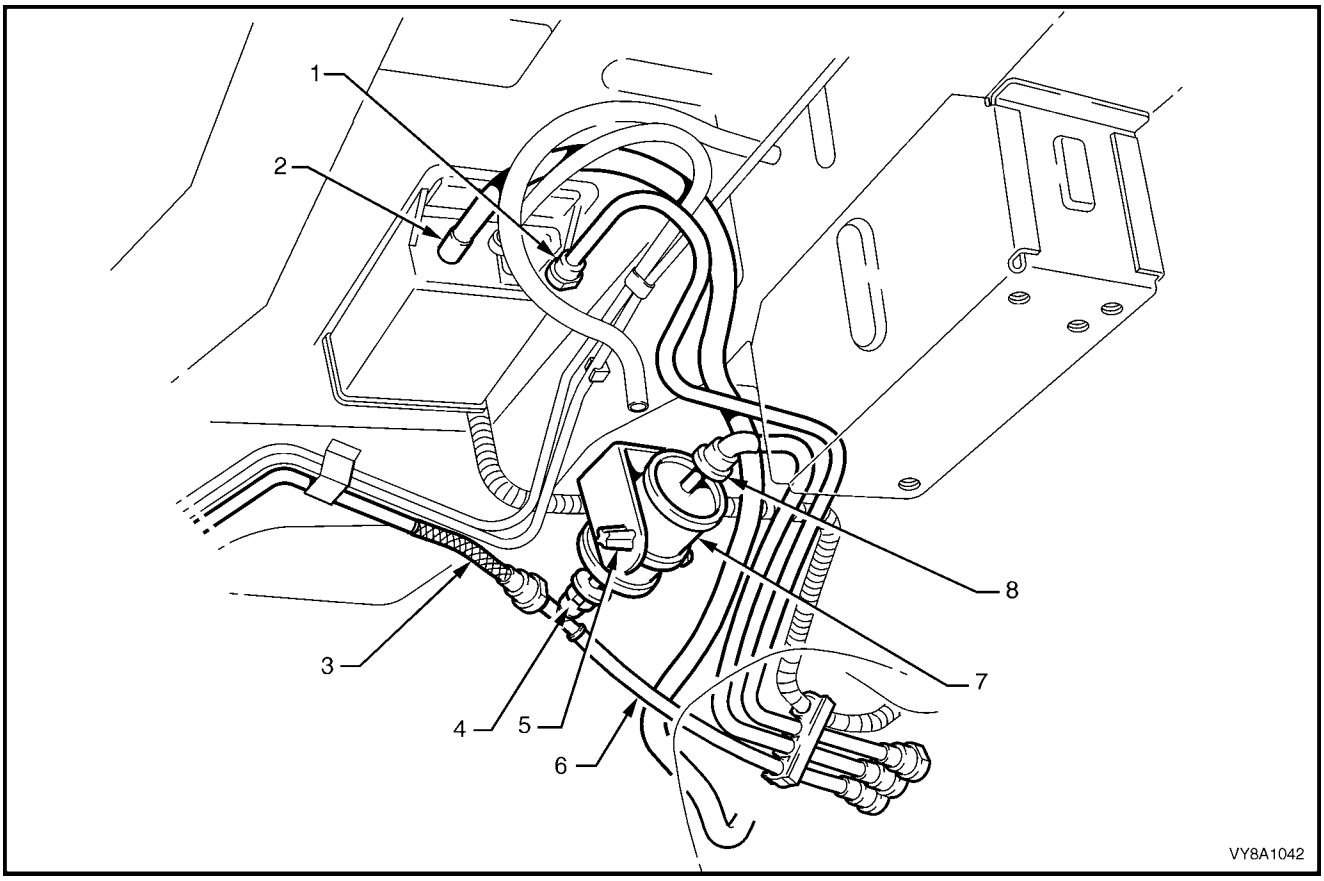


Figure 8A1–27

Legend

1. Fuel Tank Vapour Line to Canister Quick-connect
2. Filler Neck Breather Hose
3. Fuel Feed to Engine Flexible Line
4. Fuel Filter T-piece Quick-connect
5. Fuel Filter Strap Retaining Tang
6. Fuel Return Line to Fuel Tank
7. Fuel Filter
8. Fuel Feed Line Quick-connect

2.6 MODULAR FUEL PUMP AND SENDER ASSEMBLY — SEDAN, WAGON AND COUPE

REMOVE

CAUTION: Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Remove the fuel pump relay R16, refer to **Section 12O, 1.4 RELAYS**.
2. Remove the fuel tank, refer to **2.1 FUEL TANK — SEDAN AND WAGON** or **2.2 FUEL TANK — COUPE**.

IMPORTANT: Clean all traces of dirt and other foreign material from the top of the fuel tank, near the modular fuel pump and sender assembly, before proceeding.

3. Using special tool AU469 (3) and a half-inch socket bar (1), remove the modular fuel pump and sender assembly circlip (2) by turning in an anti-clockwise direction.

NOTE: The modular fuel pump and sender assembly springs up when the circlip is removed.

4. Carefully lift the modular fuel pump and sender assembly from the fuel tank, taking care not to damage the fuel sender float and arm.

IMPORTANT: When the modular fuel pump and sender assembly is removed from the fuel tank, it will be full of fuel. Pour any remaining fuel in the reservoir into a suitable container.

5. Remove and discard the sealing O-ring.

CAUTION: Fuel vapour remains in the tank even when completely empty. Seal all the openings in the fuel tank using a suitable plastic plug.

6. Place a clean rag over the opening in the fuel tank to prevent any foreign matter from entering the fuel system.

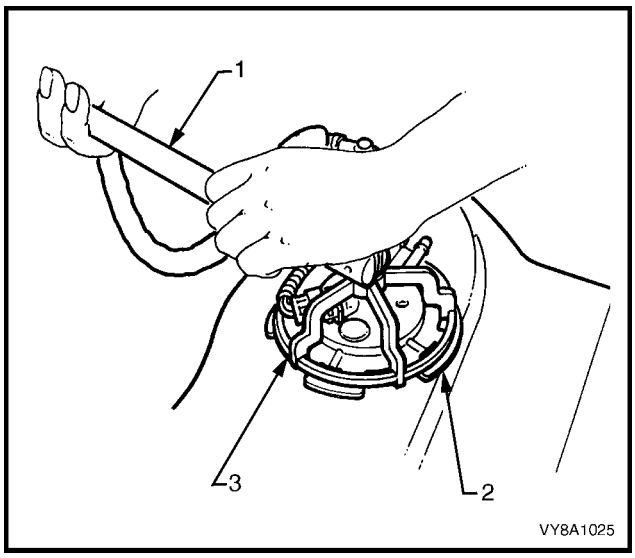


Figure 8A1–28

TEST

1. Measure the resistance across terminals 2 and 3 of the fuel pump motor connector. Take the following measurements:

a. With the float arm assembly in the empty position, the resistance should be approximately 40 ohms.

b. With the float arm assembly rotated to the full position, the resistance should be approximately 250 ohms.

2. If the fuel level sender assembly is not as specified, service the fuel level sender assembly as follows:

a. For vehicles with V6 Supercharged engines and vehicles exported to Brazil, replace the fuel level sender assembly. Refer to **2.8 FUEL LEVEL SENDER ASSEMBLY — V6 SUPERCHARGED AND VEHICLES EXPORTED TO BRAZIL**.

b. For vehicles with V6 and GEN III V8 engines replace the entire modular fuel pump and sender assembly.

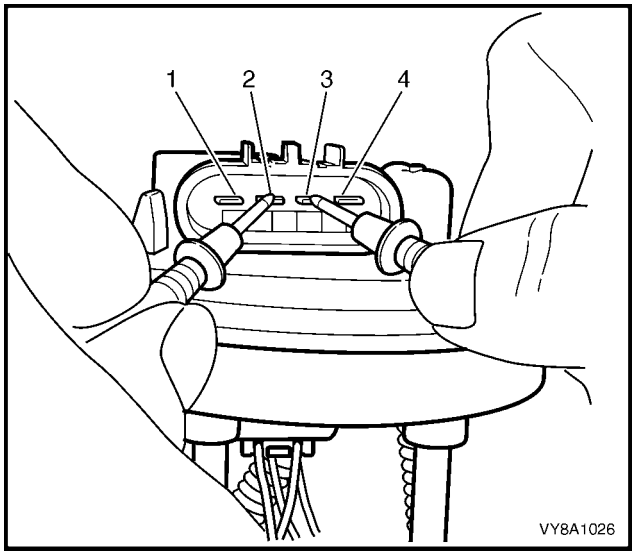


Figure 8A1–29

REINSTALL

1. Position a new O-ring seal in the fuel tank recess.
2. Install the modular fuel pump and sender assembly to the fuel tank, taking care not to damage the fuel sender float or arm in the process.

NOTE: Take care not to fold or twist the fuel pick-up strainer during module installation. Ensure the fuel pump pick-up strainer does not interfere with the float arm and full travel is still possible.

3. Ensure the locator in the pump cover engages in the slot in the tank opening.
4. Install the circlip over the modular fuel pump and sender assembly. Use a half-inch socket bar with special tool AU469 and rotate the circlip in a clockwise direction until the tangs are engaged.
5. Install the fuel tank, refer to **2.1 FUEL TANK — SEDAN AND WAGON** or **2.2 FUEL TANK — COUPE**.

2.7 MODULAR FUEL PUMP AND SENDER ASSEMBLY — UTILITY

REMOVE

CAUTION: Ensure no naked flames or other ignition sources are nearby. Ensure all mobile phones are switched off.

1. Remove the fuel pump relay R16, refer to **Section 12O, 1.4 RELAYS**.
2. Remove the load floor front panel assembly, refer to **Section 1B, 2.7 LOAD FLOOR FRONT PANEL ASSEMBLY, UTILITY**.
3. Remove the screws (2) securing the load compartment side panel inner front cover (1), refer to Figure 8A1–25. If necessary also remove the LPG filler and service lines, refer to **Section 8A2 LPG SYSTEM**.
4. Disconnect the modular fuel pump and sender assembly harness connector, refer to Figure 8A1–25.
5. Tag the fuel feed and return hoses from the connections located on top of the fuel tank, refer to Figure 8A1–25.
6. Tag the vent pipe on top of the fuel tank and disconnect by pulling the hose from the fuel tank vent fitting, refer to Figure 8A1–25.
7. Disengage the fuel return line and the fuel feed line quick-connect fittings using special tool AU533, refer to **2.10 QUICK-CONNECT FITTINGS**.
8. Remove the circlip (1) retaining the modular fuel pump and sender assembly (2).
9. Carefully lift the modular fuel pump and sender assembly from the fuel tank, taking care not to damage the fuel sender float and arm (3). Do not spill any fuel remaining in the reservoir.

CAUTION: Never drain or store fuel into an open container, due to the possibility of fire or explosion.

IMPORTANT: When the modular fuel pump and sender assembly is removed from the fuel tank, pour any fuel remaining in the reservoir into a suitable container.

NOTE: The fuel sender float arm for the Utility model is not serviced separately.

10. Remove and discard the sealing O-ring (5).

CAUTION: Fuel vapour remains in the tank even when completely empty. Seal all the openings in the fuel tank using a suitable plastic plug.

11. Place a clean rag over the opening in the fuel tank to prevent any foreign matter from entering the fuel system.

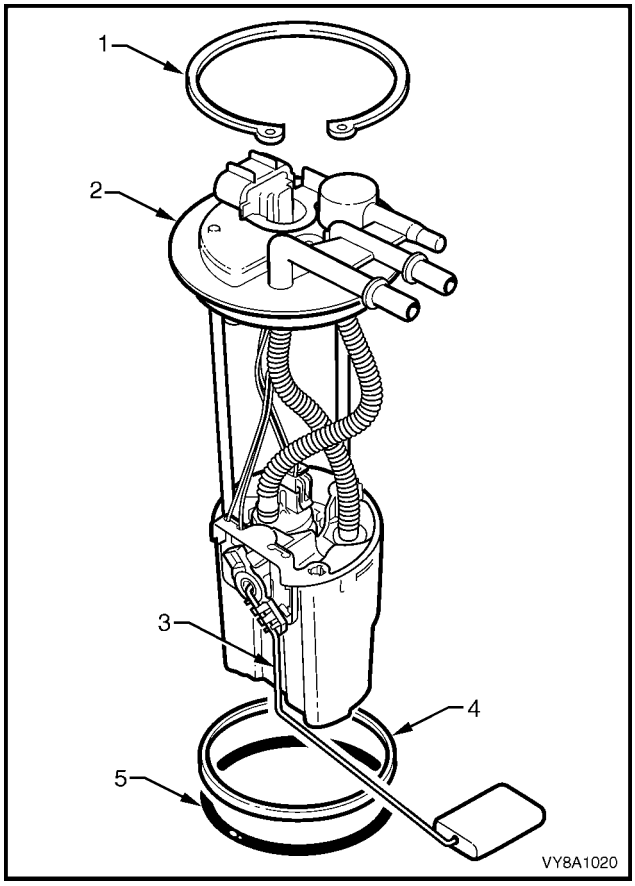


Figure 8A1–30

TEST

For the test procedure of the modular fuel pump and sender assembly refer to **2.6 MODULAR FUEL PUMP AND SENDER ASSEMBLY — SEDAN, WAGON AND COUPE**.

REINSTALL

Reinstallation procedure of the modular fuel pump and sender assembly is the reverse of the removal procedure noting the following:

1. Ensure that the spacer (4) is fitted to the modular fuel pump sender assembly, refer to Figure 8A1–30.
2. Fit a new O-ring (5) to the modular fuel pump and sender assembly.
3. Install the modular fuel pump and sender assembly into the fuel tank taking care not to damage the fuel sender float or arm in the process.

NOTE: Care should be taken not to fold or twist the fuel pick-up strainer during module installation. Ensure that the fuel pump pick-up strainer does not interfere with the float arm and full travel is still possible.

4. Install the modular fuel pump and sender assembly circlip (1).

2.8 FUEL LEVEL SENDER ASSEMBLY — V6 SUPERCHARGED AND VEHICLES EXPORTED TO BRAZIL

REMOVE

1. Remove the modular fuel pump and sender assembly refer to **2.5 FUEL FILTER — GEN III V8 ENGINE**.
2. Remove the fuel pump/sender patch harness connector as follows:

a. Use a small screwdriver to disconnect the fuel pump harness connector (2), then the fuel level sender harness connector (1) from the underside of the electrical connector located in the top of the modular fuel pump and sender assembly.

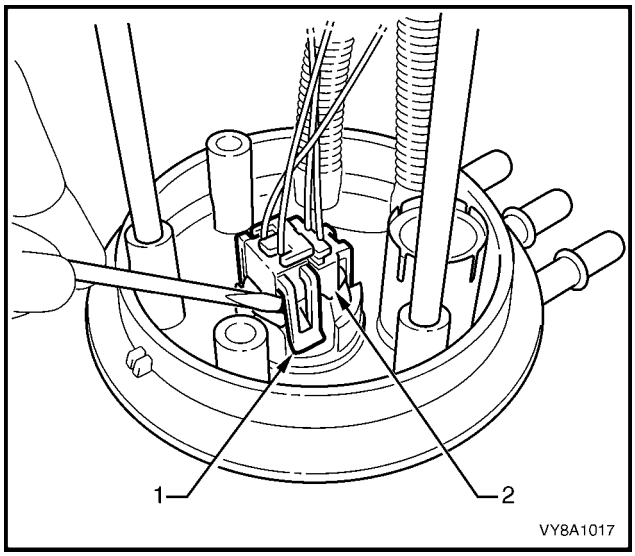


Figure 8A1–31

b. Release the locking tabs on the fuel pump harness connector (1). Remove the connector from the fuel pump.

c. Release each of the two fuel sender wires from the retainers (2 and 3) on the side of the modular fuel pump and sender assembly.

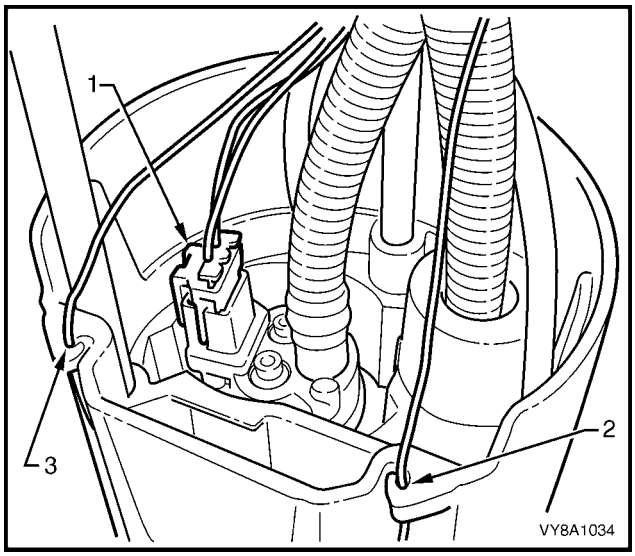


Figure 8A1–32

5. Remove the fuel sender Connector Position Assurance (CPA) locking tab (2), using a piece of broken hacksaw blade (1), ground to a suitable width and push the tab down.

NOTE: Due to the fragile nature of the CPA, it is recommended that a replacement tab be used after installation of the fuel level sender assembly.

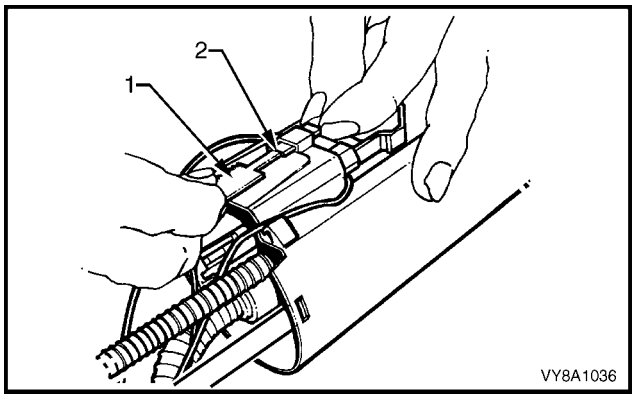


Figure 8A1–33

6. Use long-nosed pliers (1) to release the fuel sender CPA locking tabs; push down to remove the fuel level sender assembly (2).

REINSTALL

Reinstallation of the fuel level sender assembly is the reverse of the removal procedure.

1. Before installation into the fuel tank, check the fuel sender float position, as follows:

a. Stand the assembly upright on a flat surface.

b. Measure the distance between the base of the fuel sender float and the flat surface.

c. If required, the float position should be adjusted to achieve a nominal measurement of 10 mm.

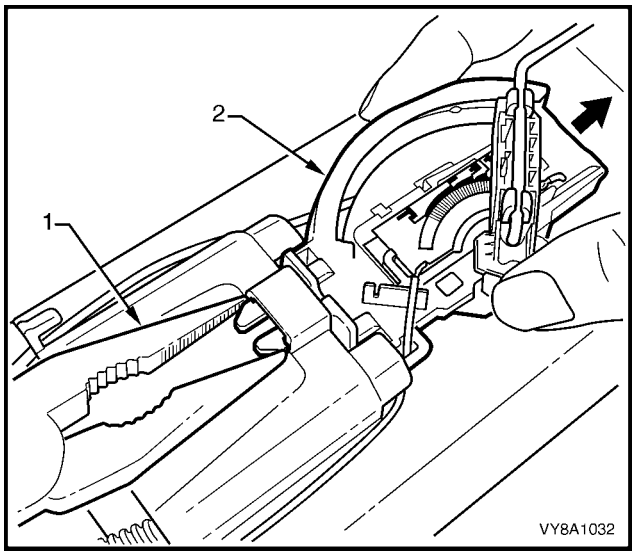


Figure 8A1–34

2.9 ROLLOVER VALVE — UTILITY

REMOVE

1. Remove the load floor front panel assembly, refer to **Section 1B, 2.7 LOAD FLOOR FRONT PANEL ASSEMBLY**.
2. Pull the fuel tank vent hose from the rollover valve (1).
3. Apply a downward pressure on the rollover valve and rotate it anti-clockwise approximately 30 degrees.
4. Remove the rollover valve from the fuel tank.
5. Place a clean rag into the hole of the fuel tank to prevent dirt and foreign matter from entering the tank.

TEST

1. Remove the rollover valve from the fuel tank.

CAUTION: Wear safety glasses when using compressed air.

2. Clean the rollover valve with compressed air.

NOTE: Do not use compressed air for the following procedure.

3. With the rollover valve upright, blow nitrogen at low pressure into the outlet pipe. The nitrogen should pass through the valve and out the inlet holes in the bottom.
4. Continue to blow nitrogen into the outlet pipe and slowly rotate the rollover valve. At approximately 90 degrees of rotation, the internal check valve should operate with an audible click; nitrogen should then cease to pass through the valves.

REINSTALL

Reinstallation of the rollover valve is the reverse of the removal procedure.

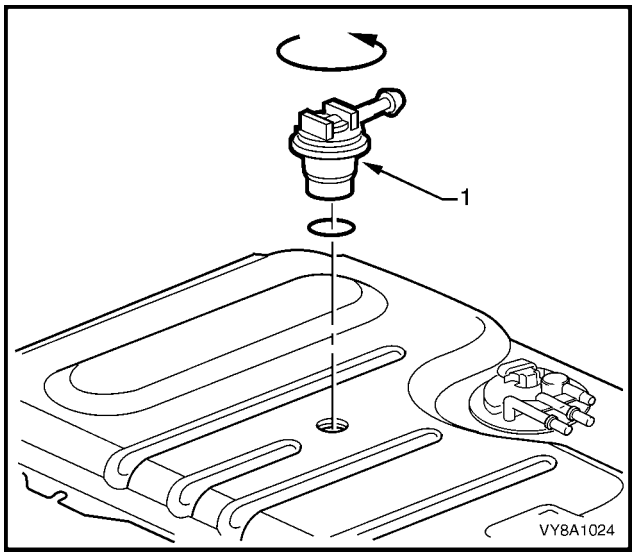


Figure 8A1–35

2.10 QUICK-CONNECT FITTINGS

SPECIAL TOOL AU533

This procedure shows the removal of the quick-connect fittings on the fuel filter using special tool AU533. The same procedure can also be applied to other quick-connect fittings.

Remove

1. Grasp both sides of the quick-connect fitting. Twist the female connector one quarter of a turn in each direction in order to loosen any dirt within the fitting.

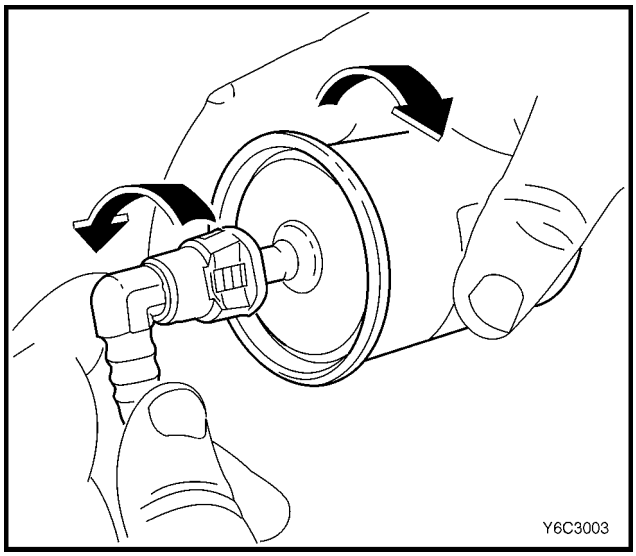


Figure 8A1–36

CAUTION: Wear safety glasses when using compressed air.

2. Using compressed air, blow any dirt out of the quick-connect fitting to aid the release of any tension or binding on the release tabs.

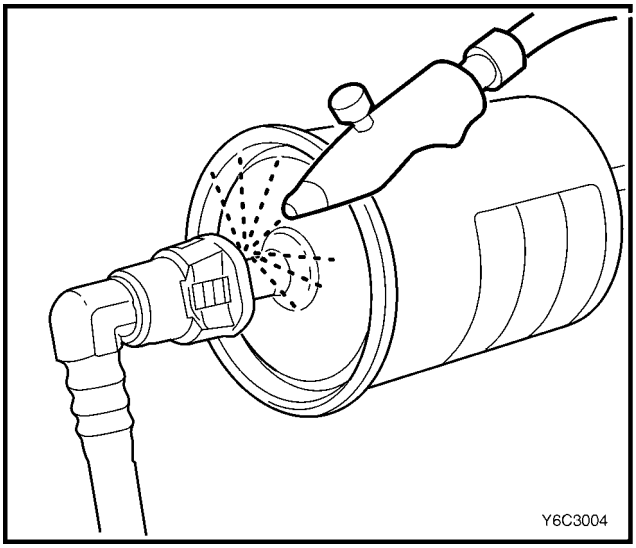


Figure 8A1–37

3. Grasp the female connector and firmly support the male connector.
4. Squeeze the plastic retainer release tabs (1) on each side of the fitting while pushing the fitting firmly inwards to release any tension on the release tabs.

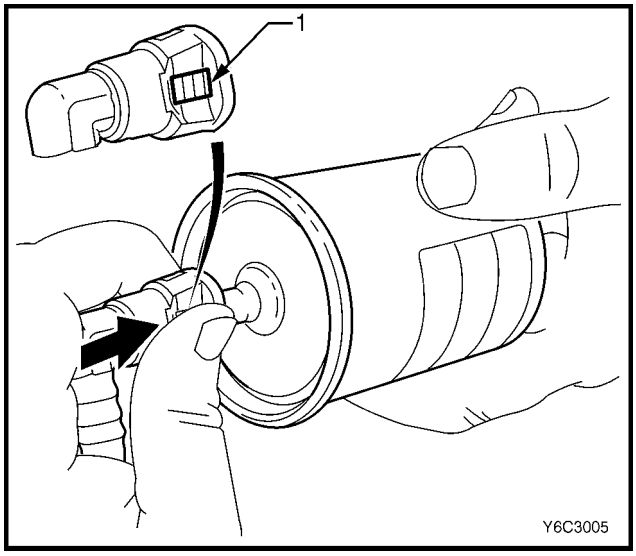


Figure 8A1–38

5. With the tension release tabs still pressed pull the connector apart.

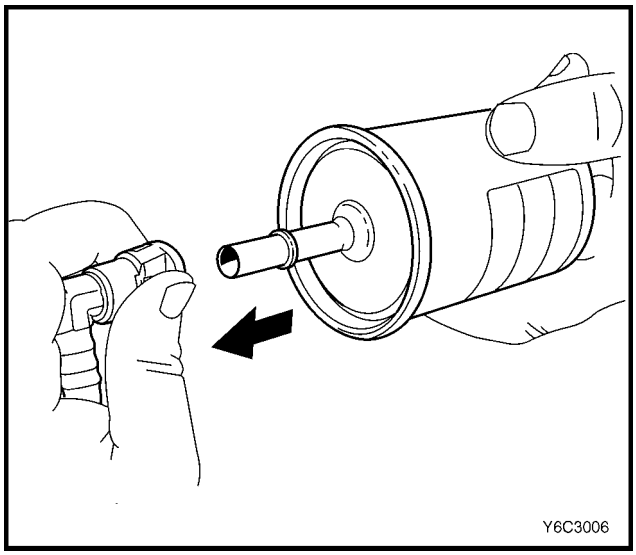


Figure 8A1–39

6. Alternatively, for steps 3 to 5, use special tool AU533 (1) to squeeze the release tabs and release the quick-connect fittings.

NOTE: Special tool AU533 will only work with retainer tabs that sit proud of the connector body. Some filter connectors have flush retainers that can only be pressed by hand.

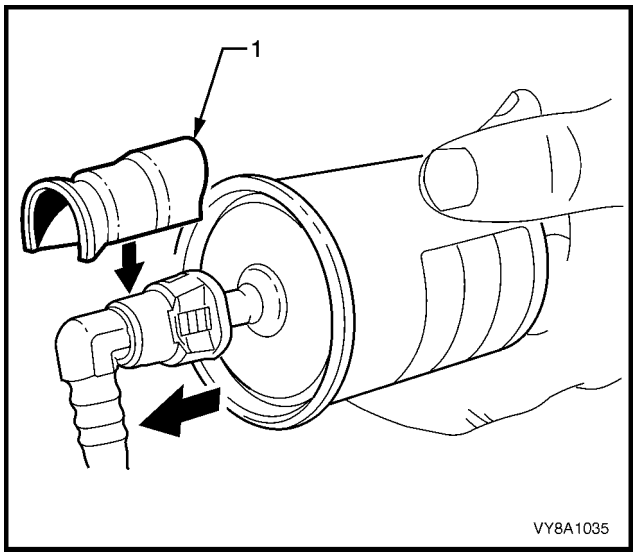


Figure 8A1–40

Reinstall

IMPORTANT: Before connecting the quick-connect fittings, always apply a few drops of clean engine oil to the male connector. This ensures proper connection and prevents a possible fuel leak. During normal operation, the O-ring located in the female connector swells and may prevent proper reconnection if not lubricated.

1. Apply a few drops of clean engine oil to each male connector.

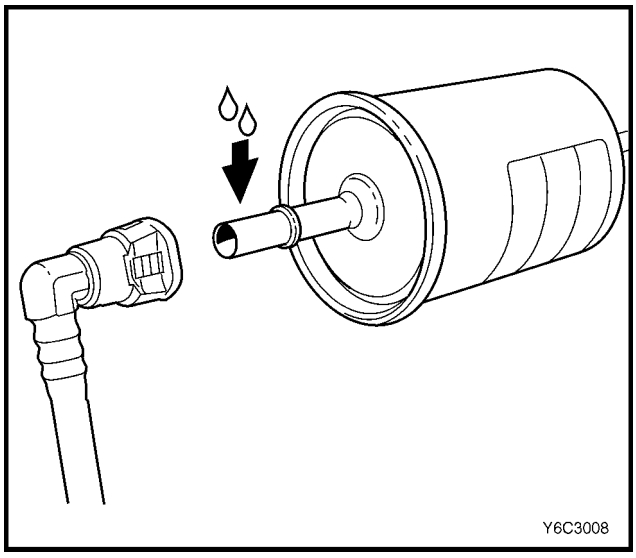


Figure 8A1–41

2. Push both quick-connect fittings together so the retaining tabs snap into place.

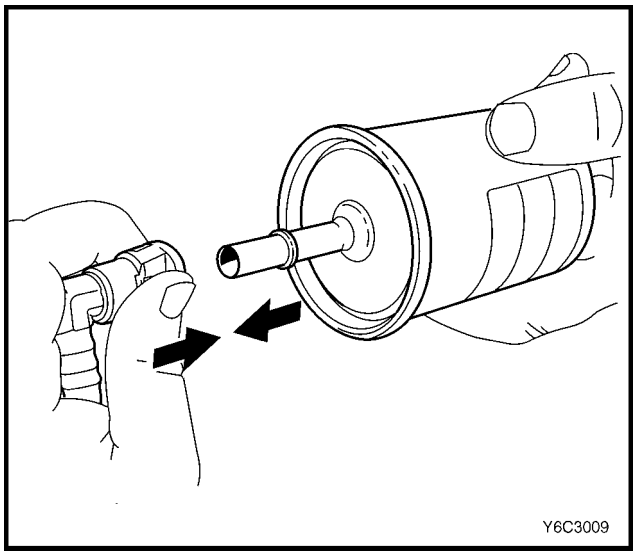


Figure 8A1–42

3. After installation, pull and push on the quick-connect fittings to ensure the connection is secure.

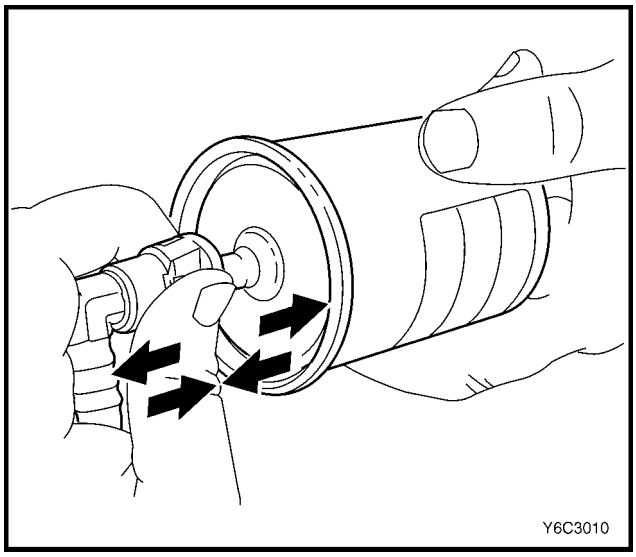


Figure 8A1–43

SPECIAL TOOLS 7370 AND 7371

Remove

Use special tools 7370 and 7371 to disconnect the fuel feed and return lines at the engine as follows:

1. Open the quick-connect release tool (2) and place it over the fuel line (1).
2. Close the tool and pull it into the fuel hose quick-connect fitting to disconnect the fuel hose from the fuel pipe.

NOTE: Do not attempt to disconnect the fuel hoses at the fuel rail. If the fuel hoses are removed from the fuel rail the hoses must be replaced.

Reinstall

Reinstallation of the quick-connect fittings disconnected using special tools 7370 and 7371 is the same procedure associated with quick-connect fittings disconnected using special tool AU533. Refer to **SPECIAL TOOL AU533** — Reinstall.

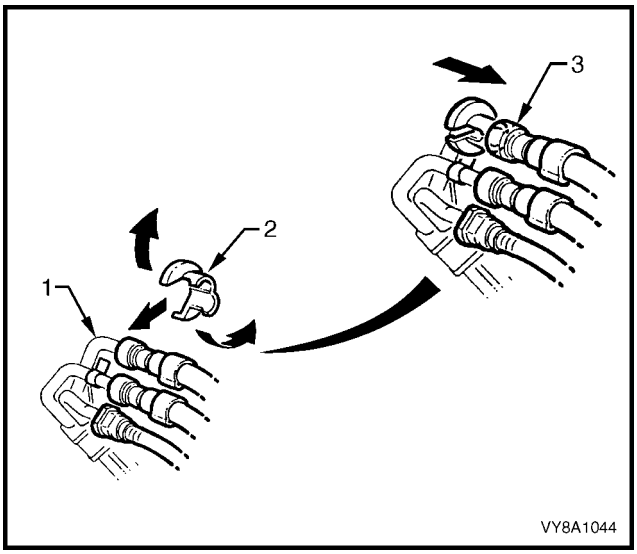


Figure 8A1–44

2.11 FUEL PIPE ARRANGEMENT

V6 AND V6 SUPERCHARGED ENGINES — SEDAN AND WAGON

Figure 8A1–45 and Figure 8A1–46 illustrate the fuel pipe layout and location of other fuel tank related items in the Sedan and Wagon with V6 engines. For the fuel pipe arrangement for vehicles fitted with the LPG system, refer to **Section 8A2 – LPG SYSTEM**.

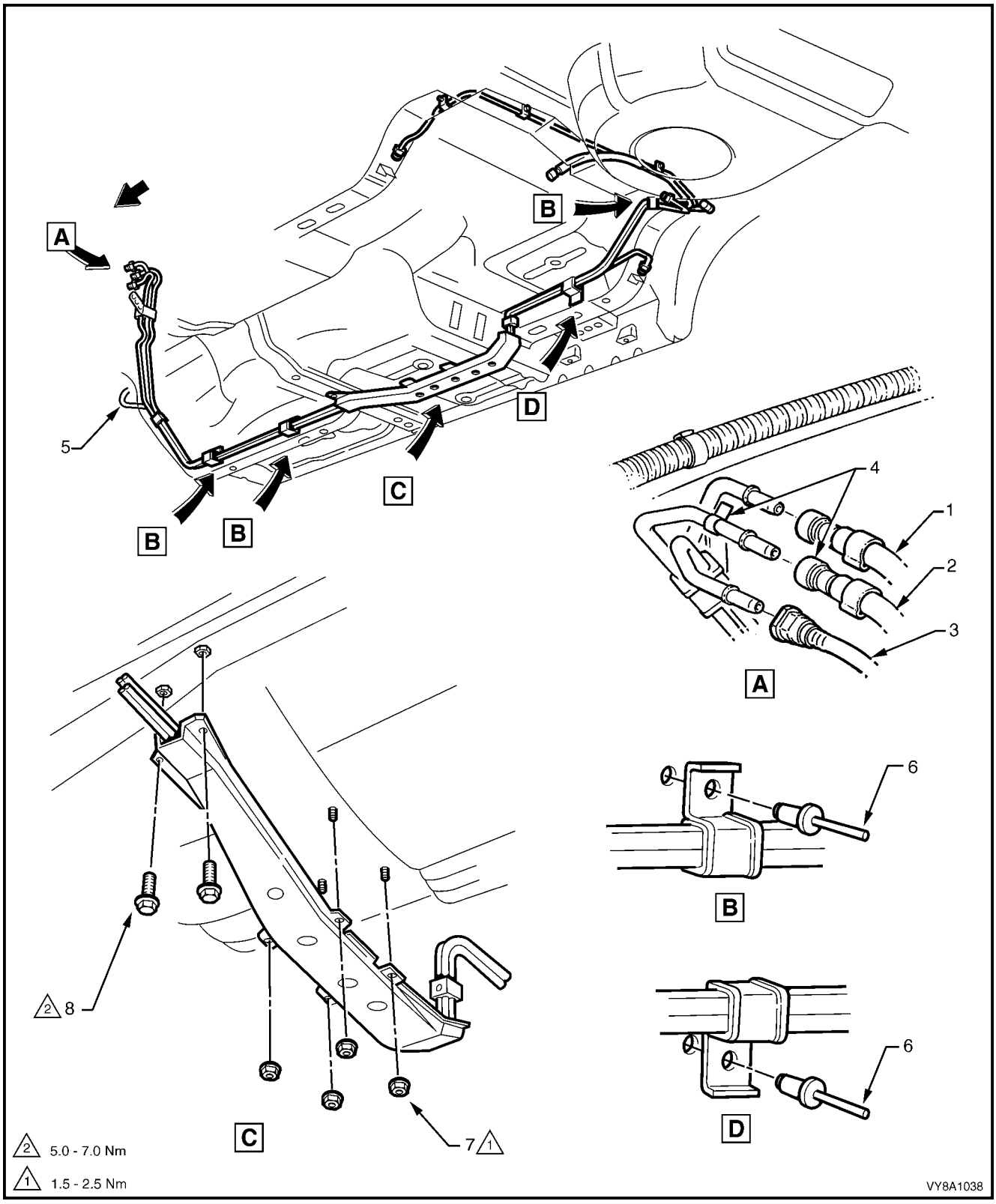


Figure 8A1–45

Legend

1. Fuel Return from Engine Hose
2. Fuel Feed to Engine Hose
3. Fuel Vapour Hose
4. White Identifying Tab
5. Brake Fluid Pipe
6. Fuel Line Bracket Pop Rivet
7. Stone Guard Securing Nut
8. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–45, for V6 engines, use special tool 7370 to remove the fuel feed hose (2) and fuel return hose (1) quick-connect fittings. For V6 Supercharged engines, use special tool 7371 to remove the fuel feed hose (2) quick-connect fitting, and special tool 7370 to remove the fuel return hose (1) quick-connect fitting. Use special tool AU533 to remove the vapour hose (3), refer to **2.10 QUICK-CONNECT FITTINGS**.

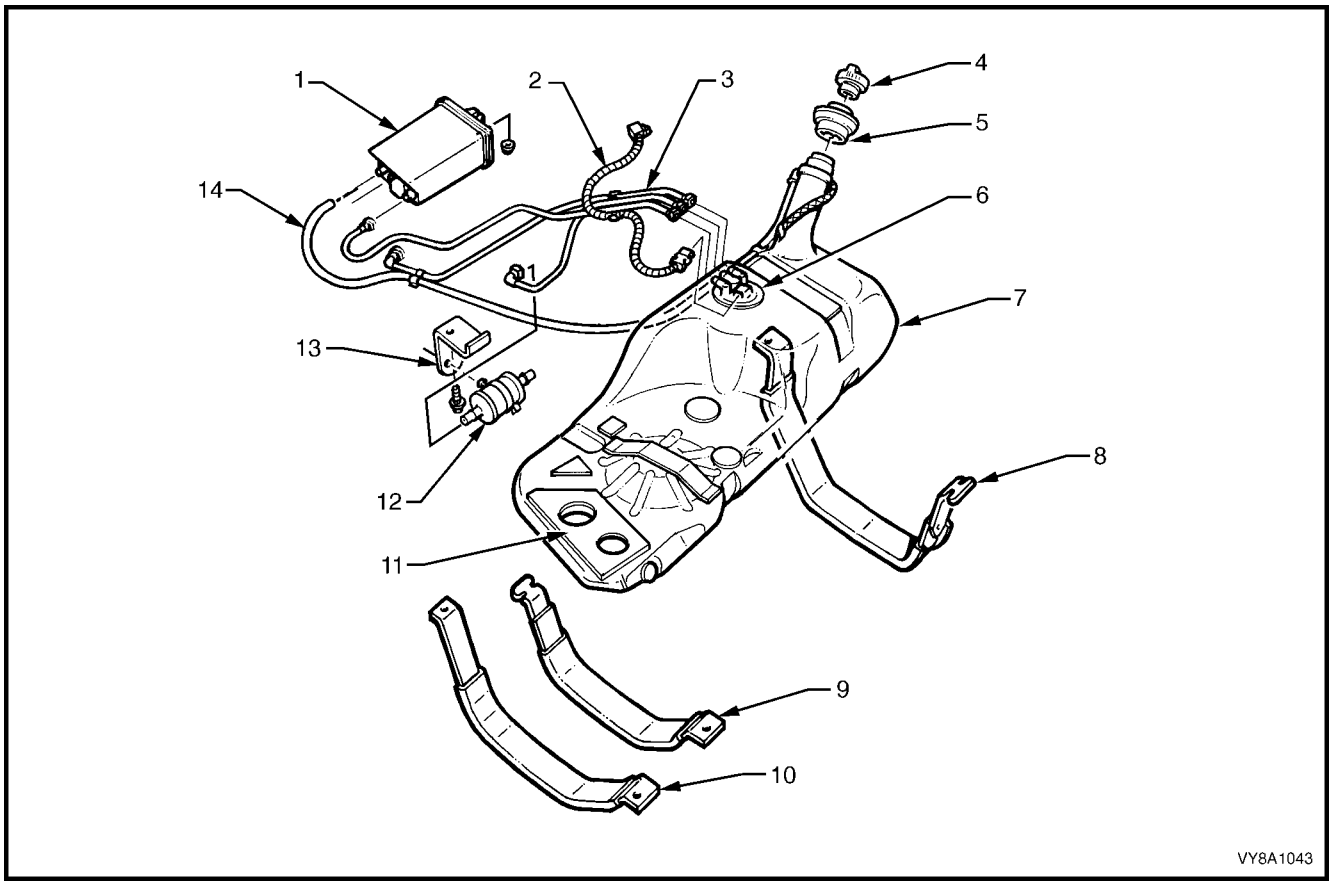


Figure 8A1–46

Legend

1. Fuel Vapour Canister
2. Electrical Patch Harness
3. Fuel and Vapour Hoses
4. Fuel Filler Cap
5. Fuel Filler Neck Insulator
6. Modular Fuel Pump and Sender Assembly
7. Fuel Tank
8. Right-hand Side Fuel Tank Mounting Strap
9. Centre Fuel Tank Mounting Strap
10. Left-hand Side Fuel Tank Mounting Strap
11. Fuel Tank to Underbody Insulator
12. Fuel Filter
13. Fuel Filter Mounting Bracket
14. Fuel Tank Vent Hose

V6 AND V6 SUPERCHARGED ENGINE – COUPE

Figure 8A1–47 and Figure 8A1–48 illustrate the fuel pipe layout and location of other fuel tank related items in the Coupe with V6 engines.

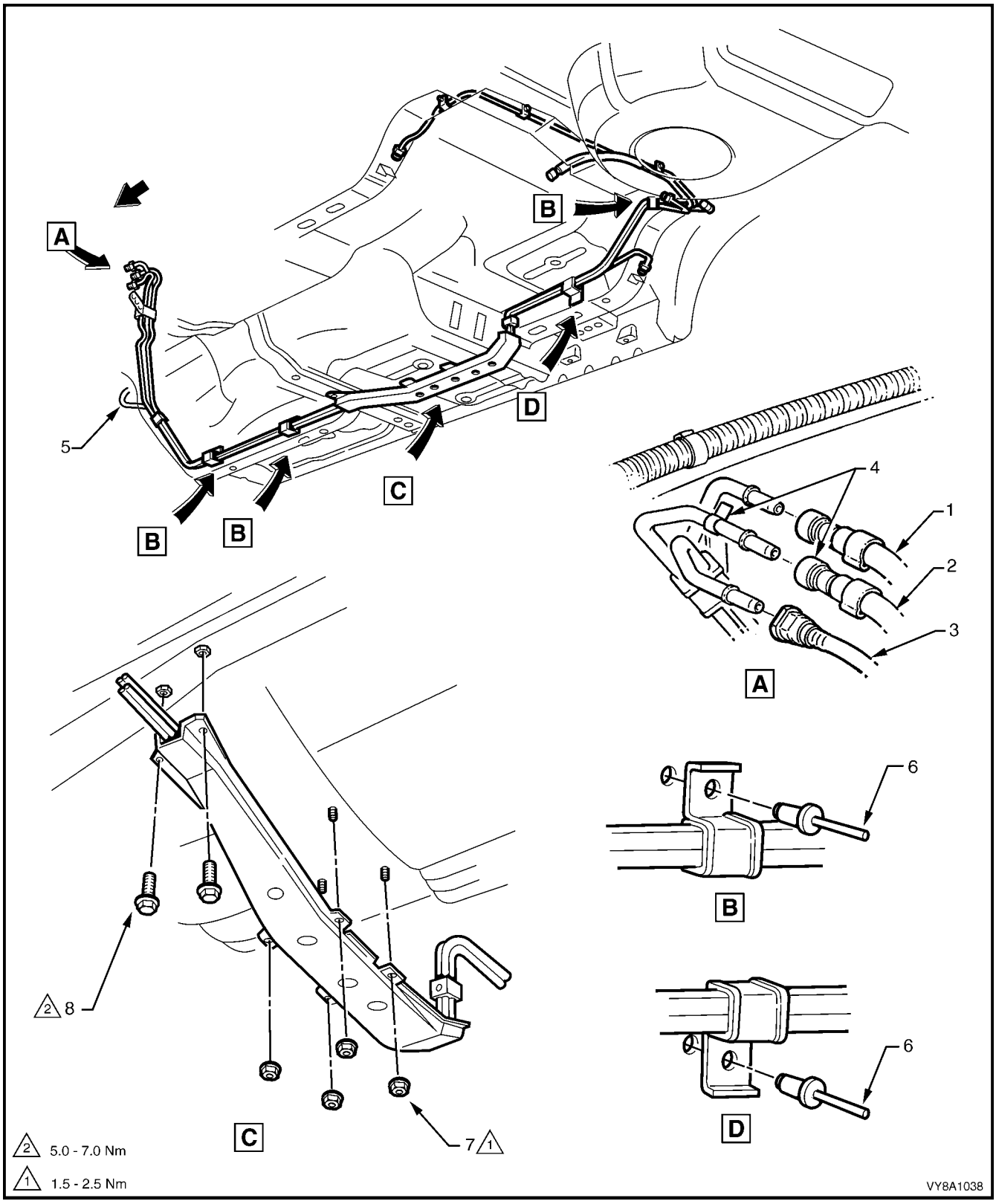


Figure 8A1–47

Legend

1. Fuel Return from Engine Hose
2. Fuel Feed to Engine Hose
3. Fuel Vapour Hose
4. White Identifying Tab
5. Brake Fluid Pipe
6. Fuel Line Bracket Pop Rivet
7. Stone Guard Securing Nut
8. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–47, for V6 engines, use special tool 7370 to remove the fuel feed hose (2) and fuel return hose (1) quick-connect fittings. For V6 Supercharged engines, use special tool 7371 to remove the fuel feed hose (2) quick-connect fitting, and special tool 7370 to remove the fuel return hose (1) quick-connect fitting. Use special tool AU533 to remove the vapour hose (3), refer to **2.10 QUICK-CONNECT FITTINGS**.

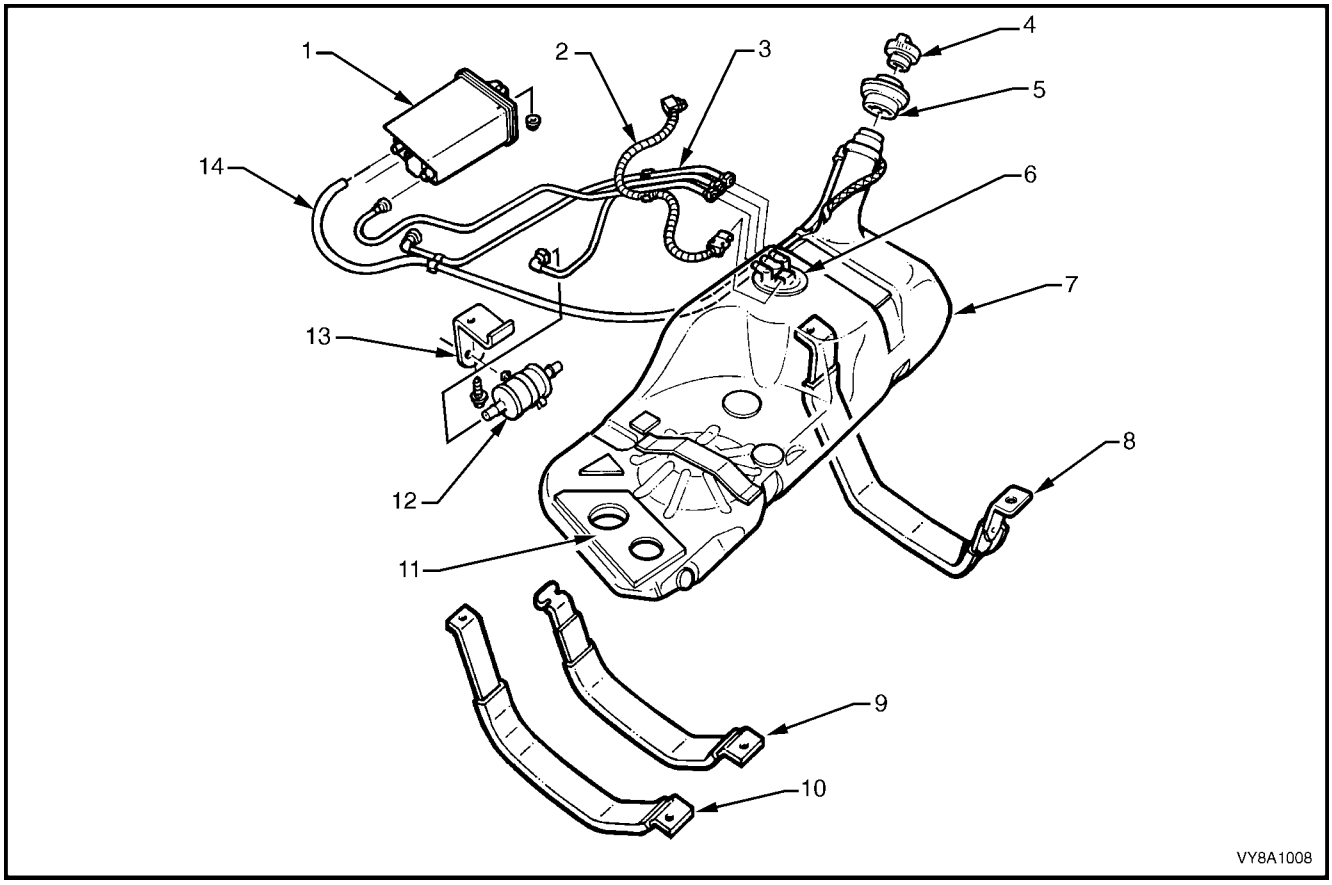


Figure 8A1–48

Legend

1. Fuel Vapour Canister
2. Electrical Patch Harness
3. Fuel and Vapour Hoses
4. Fuel Filler Cap
5. Fuel Filler Neck Insulator
6. Modular Fuel Pump and Sender Assembly
7. Fuel Tank
8. Right-hand Side Fuel Tank Mounting Strap
9. Centre Fuel Tank Mounting Strap
10. Left-hand Side Fuel Tank Mounting Strap
11. Fuel Tank to Underbody Insulator
12. Fuel Filter
13. Fuel Filter Mounting Bracket
14. Fuel Tank Vent Hose

V6 ENGINE — UTILITY

Figure 8A1–49 and Figure 8A1–50 illustrate the fuel pipe layout and location of other fuel tank related items in the Utility with V6 engines. For the fuel pipe arrangement for vehicles fitted with the LPG system, refer to **Section 8A2 – LPG SYSTEM** in this service information.

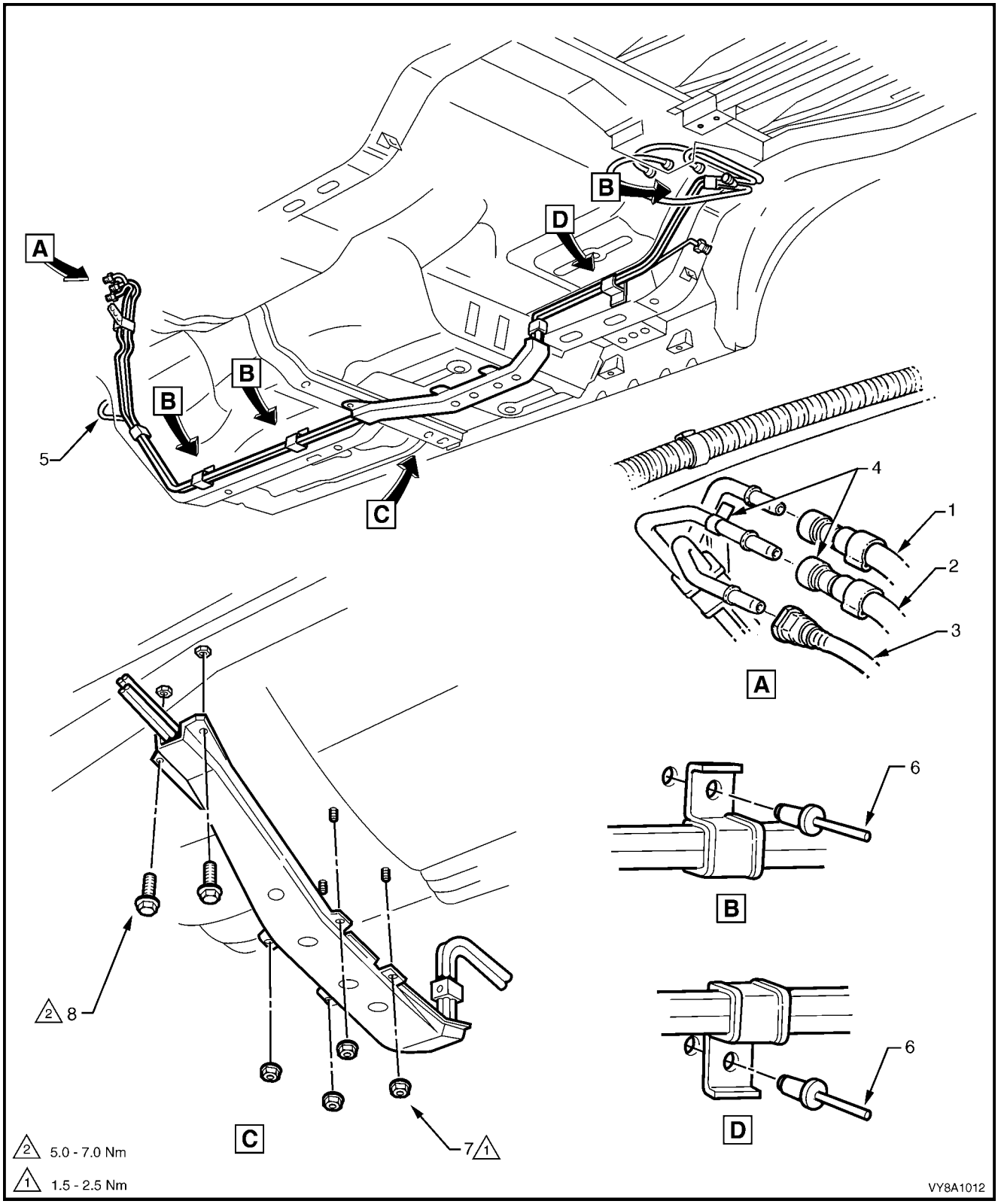


Figure 8A1–49

Legend

1. Fuel Return from Engine Hose
2. Fuel Feed to Engine Hose
3. Fuel Vapour Hose
4. White Identifying Tab
5. Brake Fluid Pipe
6. Fuel Line Bracket Pop Rivet
7. Stone Guard Securing Nut
8. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–49, for V6 engines, use special tool 7370 to remove the fuel feed hose (2) and fuel return hose (1) quick-connect fittings. Use special tool AU533 to remove the vapour hose (3) quick-connect fitting, refer to **2.10 QUICK-CONNECT FITTINGS**.

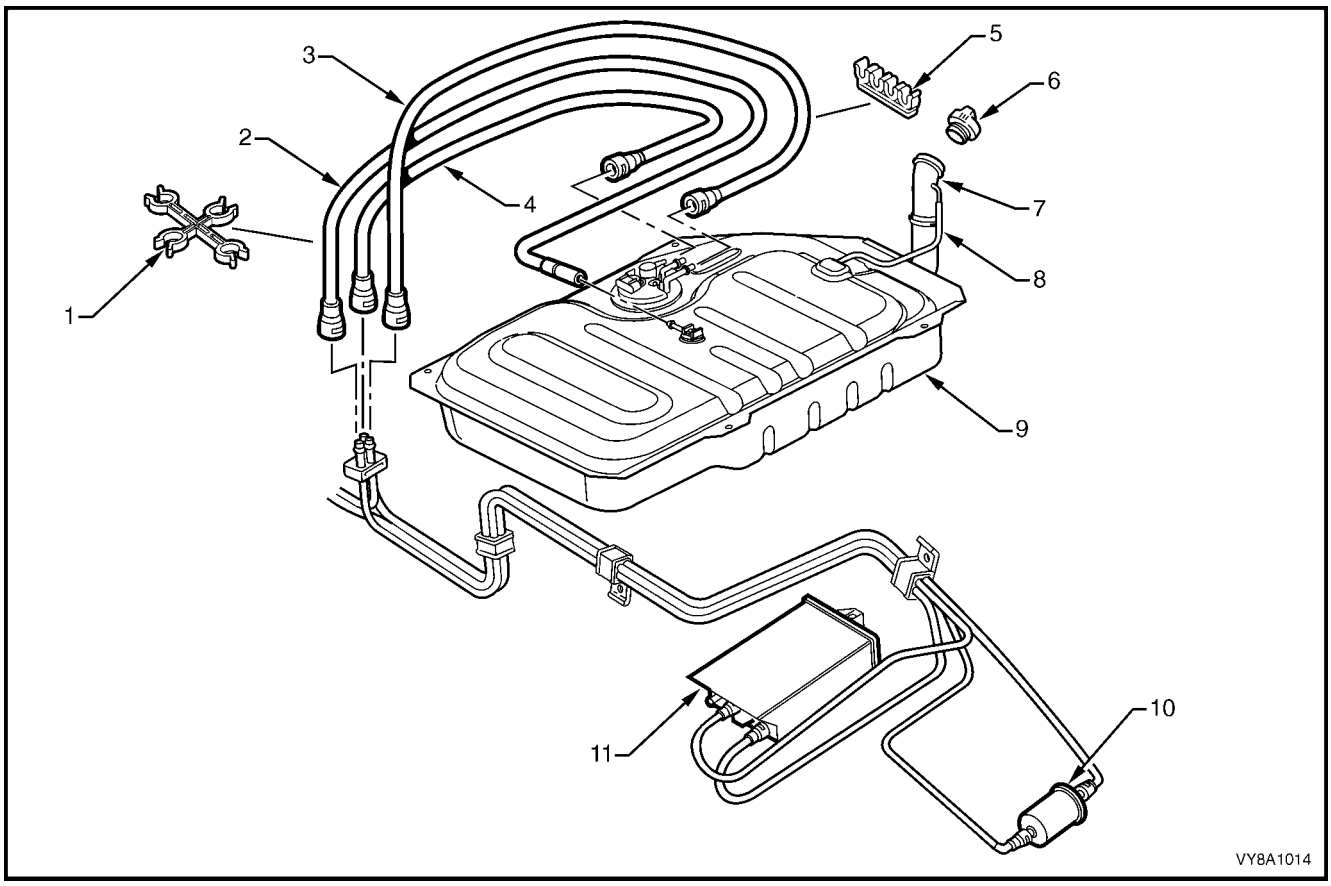


Figure 8A1–50

Legend

1. Mounting Clip
2. Fuel Vapour Hose
3. Fuel Return from Engine Hose
4. Fuel Feed to Engine Hose
5. Mounting Clip
6. Fuel Filler Cap
7. Fuel Filler Neck
8. Fuel Tank Vent Hose
9. Fuel Tank
10. Fuel Filter
11. Fuel Vapour Canister

GEN III V8 ENGINE — SEDAN AND WAGON

Figure 8A1–51 and Figure 8A1–52 illustrate the fuel pipe layout and location of other fuel tank related items in the Sedan and Wagon with a GEN III V8.

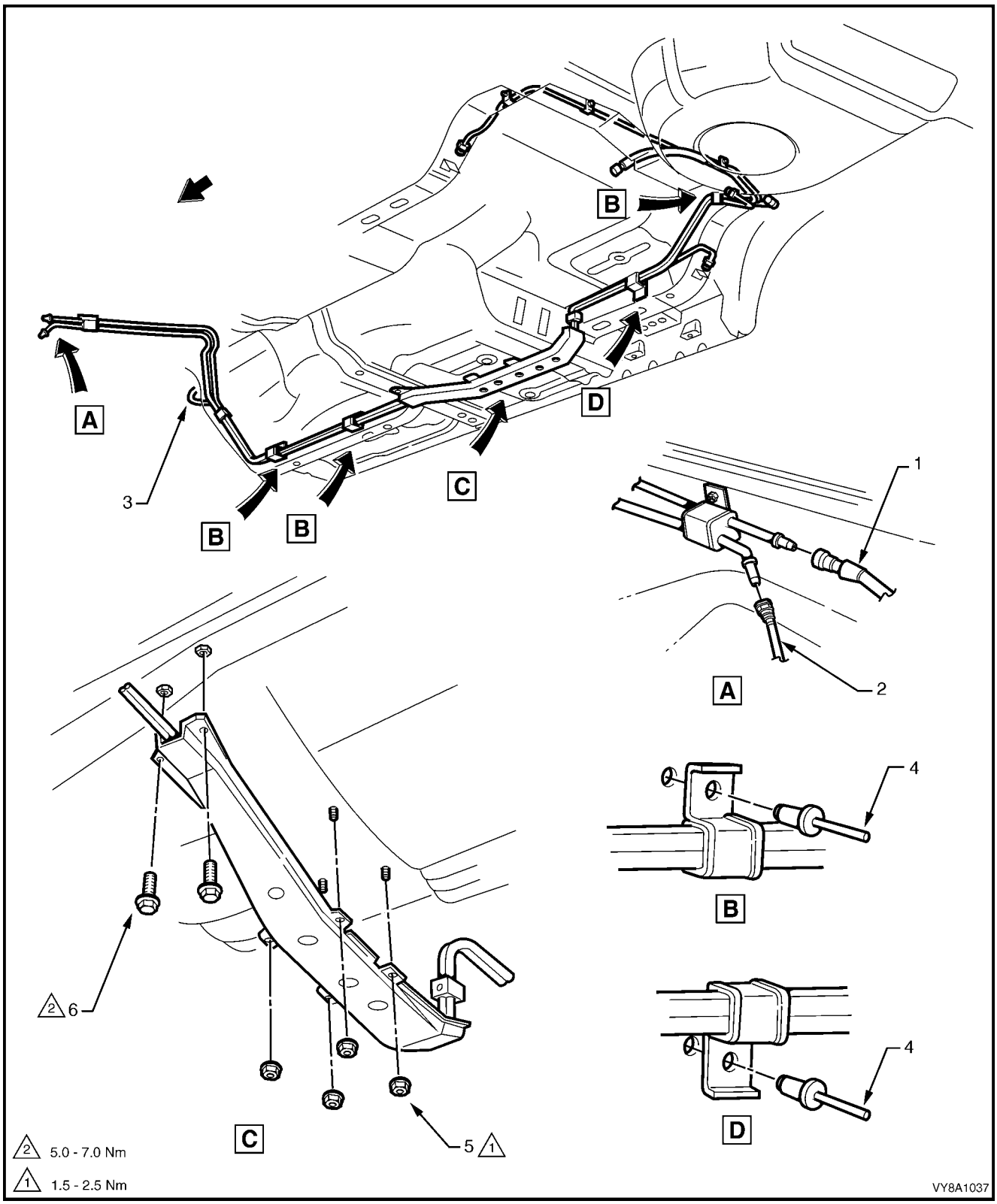


Figure 8A1–51

Legend

1. Fuel Feed/Return to Engine Hose
2. Fuel Vapour Hose
3. Brake Fluid Pipe
4. Fuel Line Bracket Pop Rivet
5. Stone Guard Securing Nut
6. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–51, for GEN III V8 engines use special tool 7371 to remove the fuel feed/return to engine hose (1) quick-connect fitting and special tool AU533 to remove the fuel vapour hose (2) quick-connect fitting, refer to **2.10 QUICK-CONNECT FITTINGS**.

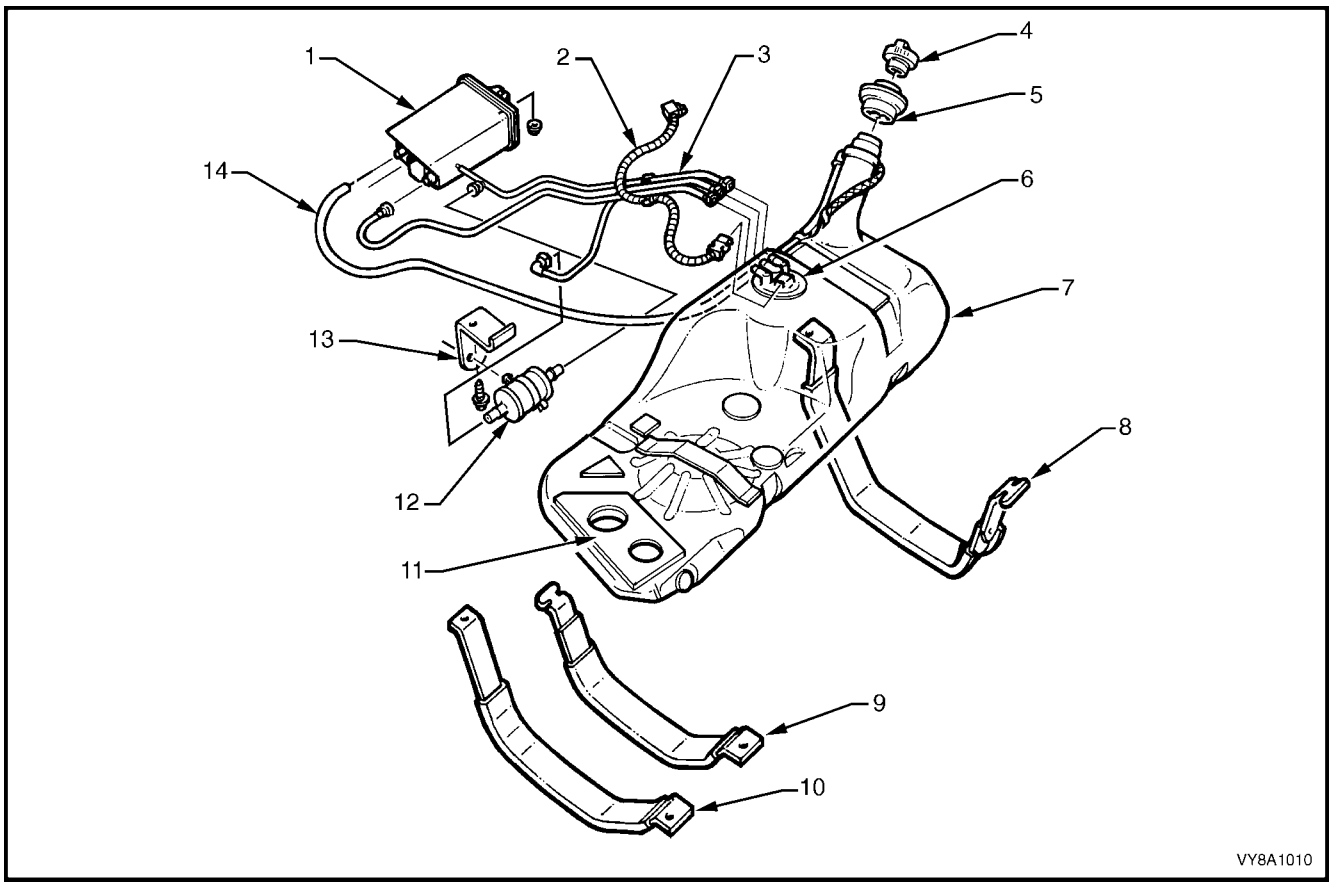


Figure 8A1–52

Legend

1. Fuel Vapour Canister
2. Electrical Harness Connector
3. Fuel Return Hose
4. Fuel Filler Cap
5. Fuel Filler Neck Insulator
6. Modular Fuel Pump and Sender Assembly
7. Fuel Tank
8. Right-hand Side Fuel Tank Mounting Strap
9. Centre Fuel Tank Mounting Strap
10. Left-hand Side Fuel Tank Mounting Strap
11. Insulator Kit
12. Fuel Filter
13. Fuel Filter Mounting Bracket
14. Filler Neck Breather Hose

GEN III V8 ENGINE — COUPE

Figure 8A1–53 and Figure 8A1–54 illustrate the fuel pipe layout and location of other fuel tank related items in the Coupe with a GEN III V8 engine.

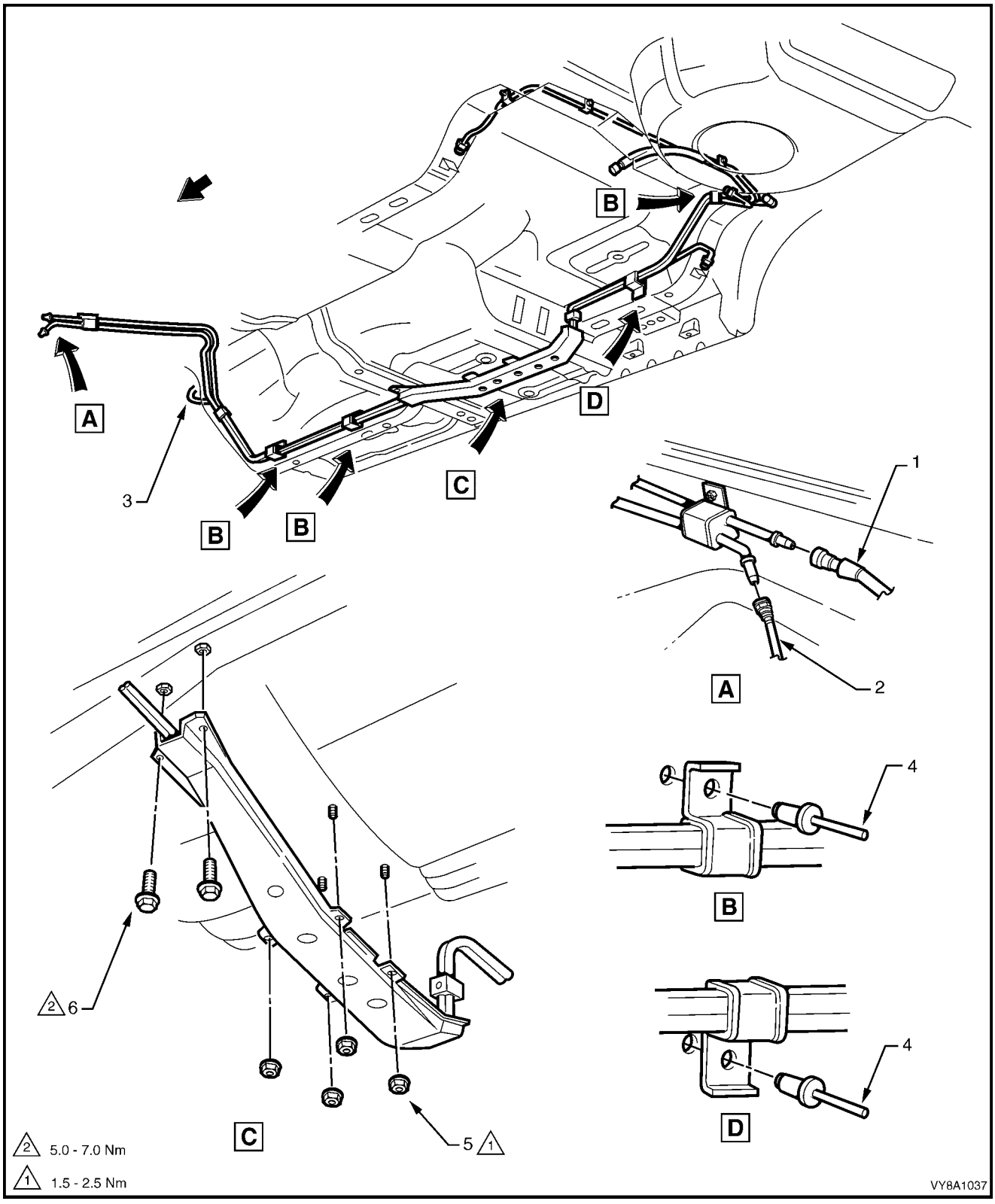


Figure 8A1–53

Legend

1. Fuel Feed/Return to Engine Hose
2. Fuel Vapour Hose
3. Brake Fluid Pipe
4. Fuel Line Bracket Pop Rivet
5. Stone Guard Securing Nut
6. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–53, For GEN III V8 engines use special tool 7371 to remove the fuel feed/return to engine hose (1) quick-connect fitting and special tool AU533 to remove the fuel vapour hose (2) quick-connect fitting, refer to **2.10 QUICK-CONNECT FITTINGS**.

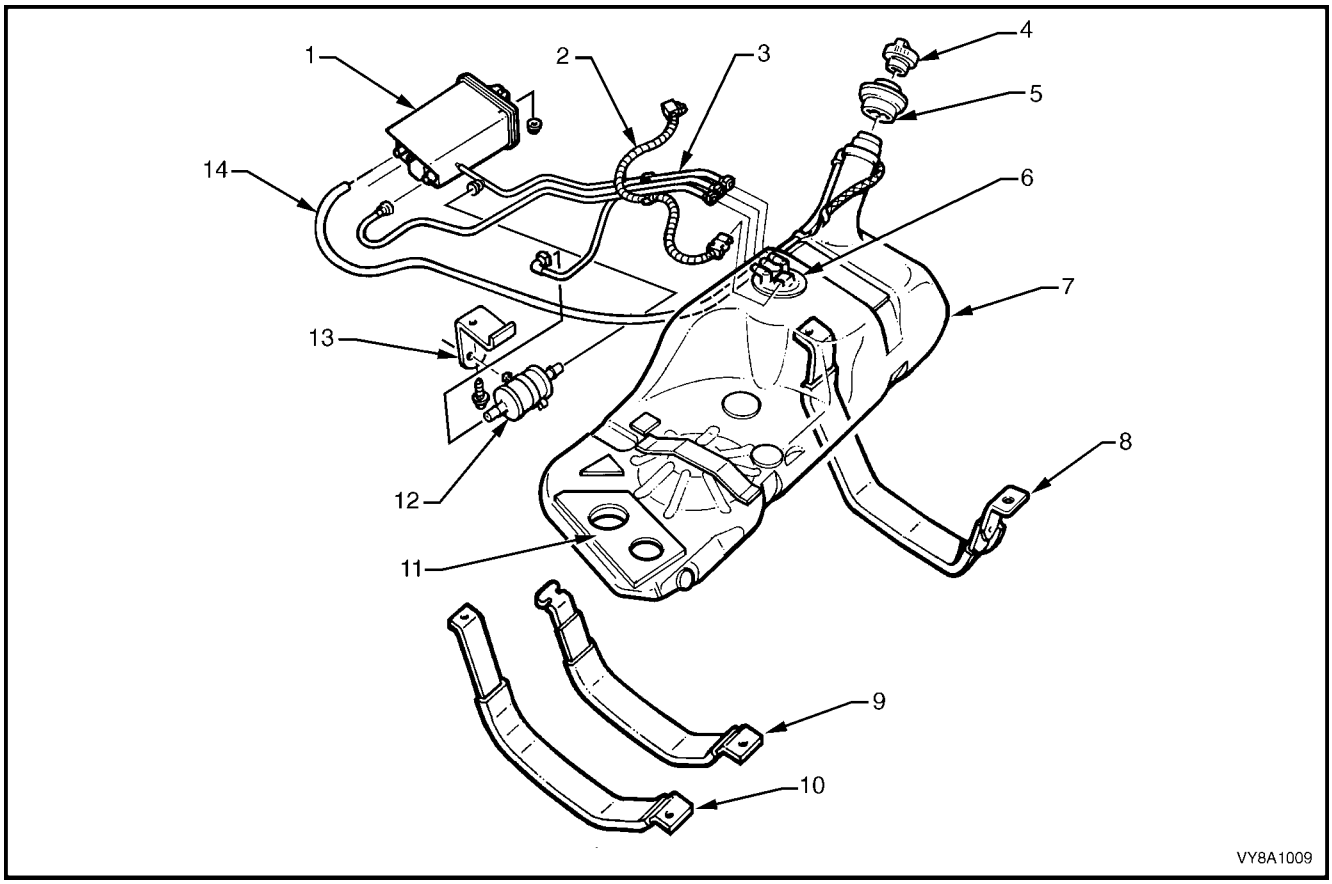


Figure 8A1–54

Legend

1. Fuel Vapour Canister
2. Electrical Patch Harness
3. Fuel Return Hose
4. Fuel Filler cap
5. Fuel Filler Neck Insulator
6. Modular Fuel Pump and Sender Assembly
7. Fuel Tank
8. Right-hand Side Fuel Tank Mounting Strap
9. Centre Fuel Tank Mounting Strap
10. Left-hand Side Fuel Tank Mounting Strap
11. Insulator Kit
12. Fuel Filter
13. Fuel Filter Mounting Bracket
14. Filler Neck Breather Hose

GEN III V8 ENGINE — UTILITY

Figure 8A1–55 and Figure 8A1–56 and Figure 8A1–25 illustrate the fuel pipe layout and location of other fuel tank related items in the Utility with a GEN III V8 engine.

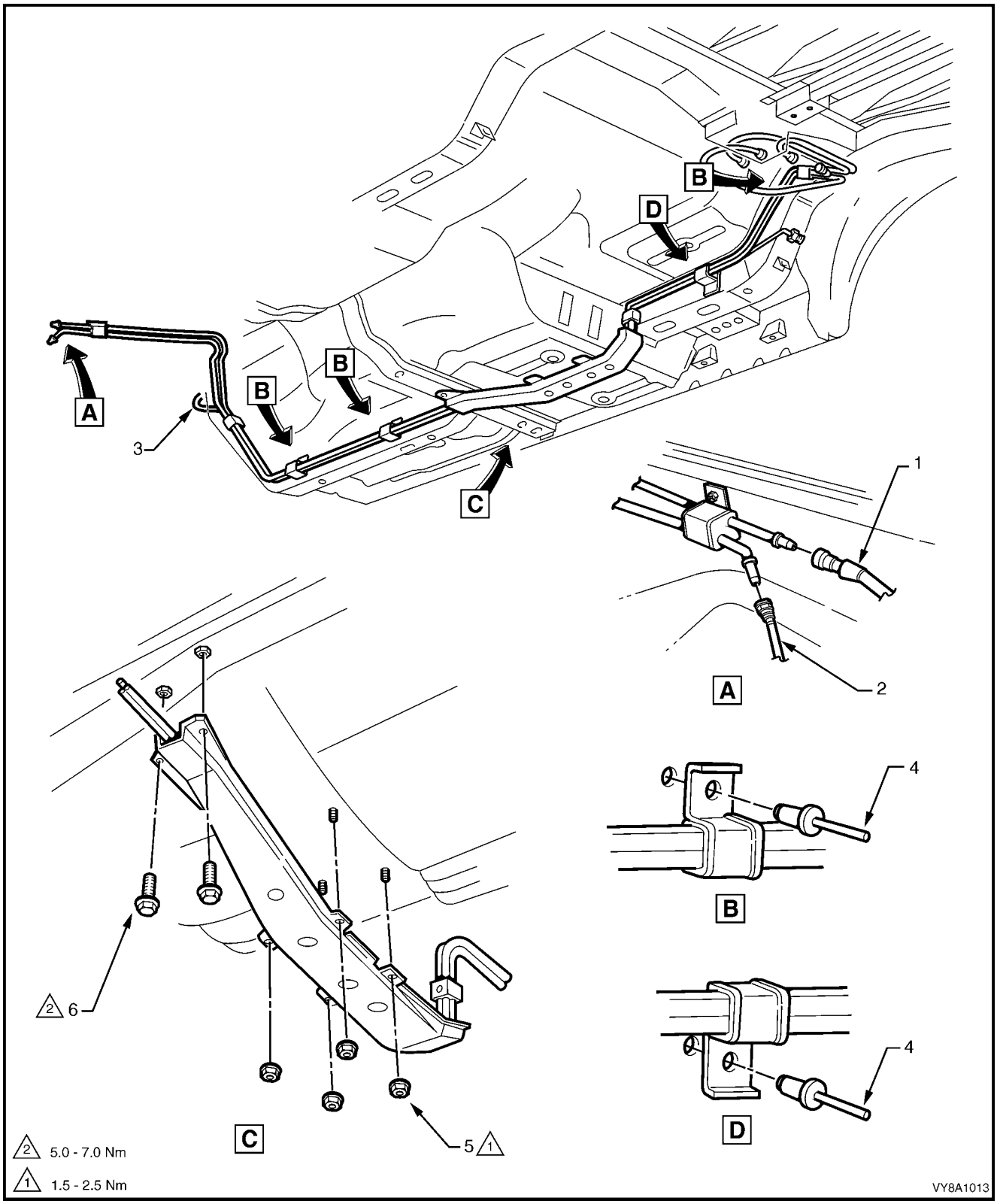


Figure 8A1–55

Legend

1. Fuel Feed/Return to Engine Hose
2. Fuel Vapour Hose
3. Brake Fluid Pipe
4. Fuel Line Bracket Pop Rivet
5. Stone Guard Securing Nut
6. Stone Guard Securing Bolt

SERVICE NOTE: Refer to Figure 8A1–55, for GEN III V8 engines use special tool 7371 to remove the fuel feed/return to engine hose (1) quick-connect fitting and special tool AU533 to remove the fuel vapour hose (2) quick-connect fitting, refer to **2.10 QUICK-CONNECT FITTINGS**.

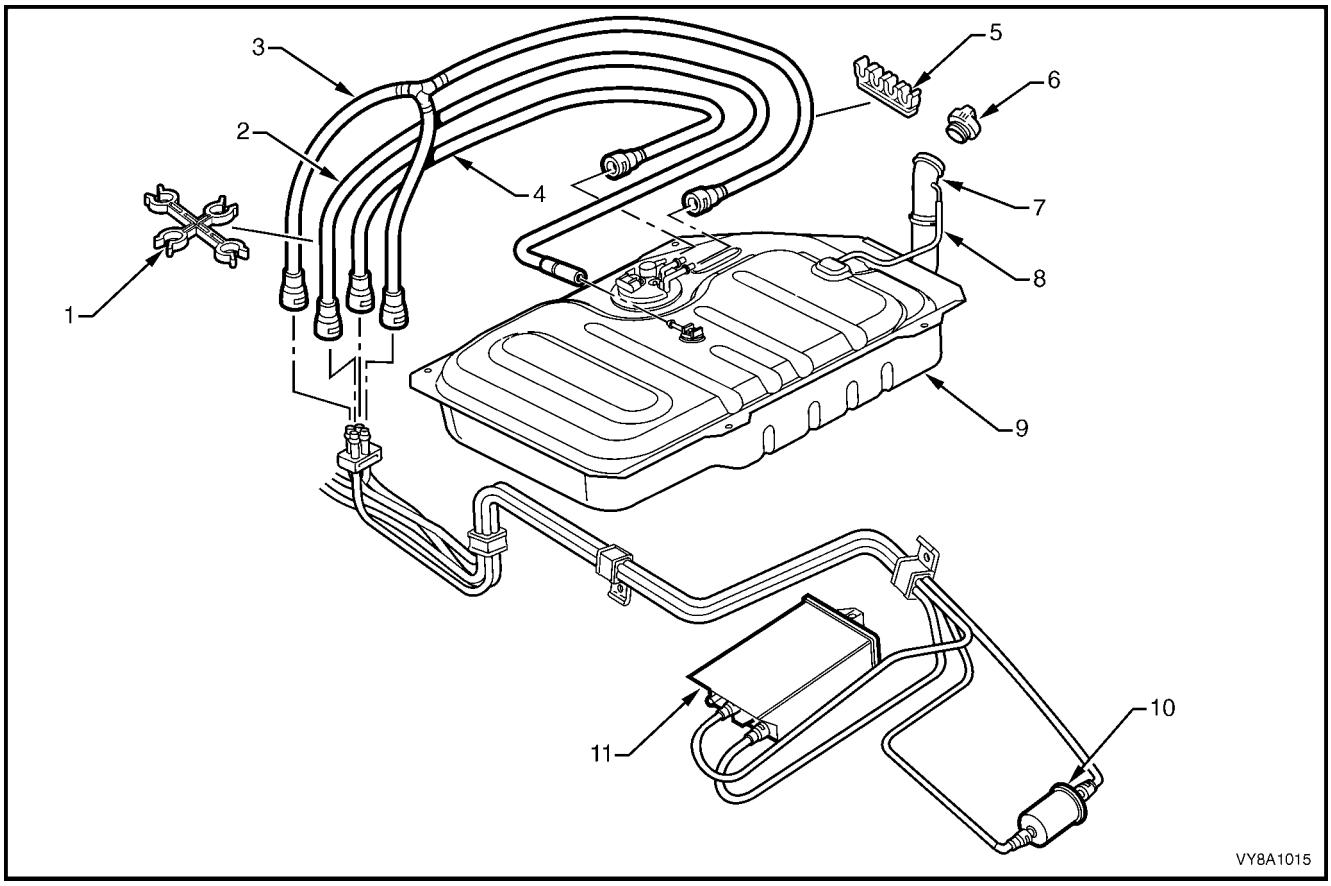


Figure 8A1–56

Legend

1. Mounting Clip
2. Fuel Vapour Hose
3. Fuel Return from Engine Hose
4. Fuel Feed to Engine Hose
5. Mounting Clip
6. Fuel Filler Cap
7. Fuel Filler Neck
8. Fuel Tank Vent Hose
9. Fuel Tank
10. Fuel Filter
11. Fuel Vapour Canister

3. SPECIFICATIONS

Fuel Tank Capacity:

Sedan, Wagon and Coupe	75 litres
Utility	70 litres

Fuel Tank Material:

Sedan, Wagon and Coupe	High density multi-layer polyethylene
Utility	Pressed Steel

Fuel Filler Location:

All Models	Right-hand rear quarter panel

Fuel Pump Type:

V6 Engine	Single Turbine
V6 Supercharged Engine	Roller Vane
Gen III V8 Engine	Single Turbine
Vehicles exported to Brazil	Dual Stage Turbine

Fuel Pump Location:

All Models	In tank

Fuel Pump Regulated Pressure:

V6 Engine	350 kPa
V6 Supercharged Engine	410 kPa
GEN III V8 Engine	400 kPa
Vehicles exported to Brazil	350 kPa

Minimum Fuel Pump Flow Capacity (at Regulated Pressure):

V6 Engine	1.7 L/min @ 13.5 volts
V6 Supercharged Engine	3.2 L/min @ 13.5 volts
GEN III V8 Engine	2.5 L/min @ 13.5 volts
Vehicles exported to Brazil	1.7 L/min @ 13.5 volts

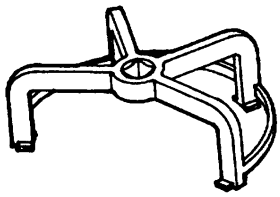
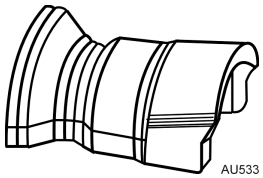
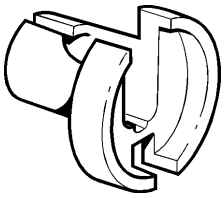
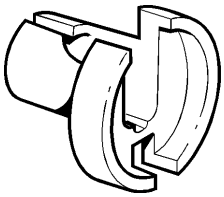
Fuel Pump Current Draw (Steady State at Regulated Pressure):

V6 Engine	7.4 Amps maximum
V6 Supercharged Engine	18.0 Amps maximum
GEN III V8 Engine	9.6 Amps maximum
Vehicles Exported to Brazil	12.0 Amps maximum

4. TORQUE WRENCH SPECIFICATIONS

Fuel Tank Strap Nuts/Bolts (Sedan and Wagon)	15.0 – 25.0 Nm
Fuel Tank Mounting Strap Attaching Nuts/Bolts (Coupe)	25.0 – 40.0 Nm
Fuel Tank Mounting Nut (Utility)	25.0 – 30.0 Nm
Fuel Filter Bracket Screw.....	5.0 – 8.0 Nm
Canister Mounting Nut	2.0 – 5.0 Nm
Stone Guard Securing Nut.....	1.5 – 2.5 Nm
Stone Guard Securing Bolt	5.0 – 7.0 Nm

5. SPECIAL TOOLS

TOOL NUMBER	ILLUSTRATION	DESCRIPTION	TOOL CLASSIFICATION
AU469 (J39765)		MODULAR FUEL PUMP AND SENDER ASSEMBLY REMOVER / INSTALLER Previously released.	Mandatory
AU533	 AU533	QUICK CONNECT FITTING RELEASE TOOL Released in two sizes; Red for 5/16” fittings and Blue for 3/8” fittings. Also available commercially. Previously released.	Desirable
7370	 T6A3295	QUICK CONNECT RELEASE TOOL – 5/16” Used for releasing fuel hose quick connects at the dash panel and fuel rail connections, after the fuel system has been depressurised. Previously released.	Mandatory
7371	 T6A3295	QUICK CONNECT RELEASE TOOL – 3/8” Used for releasing fuel hose quick connects at the dash panel and fuel rail connections, after the fuel system has been depressurised. Previously released.	Mandatory