



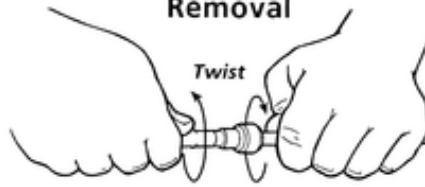
Metal Collar Quick-connect Fitting



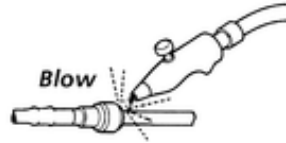
Plastic Collar Quick-connect Fitting

Removal

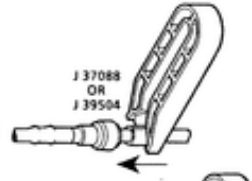
Step 1



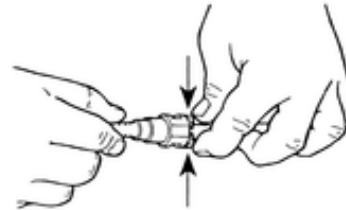
Step 2



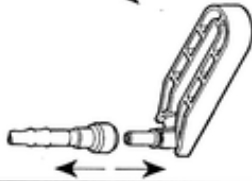
Step 3



OR

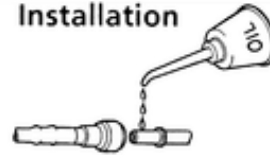


Step 4



Installation

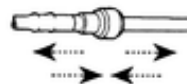
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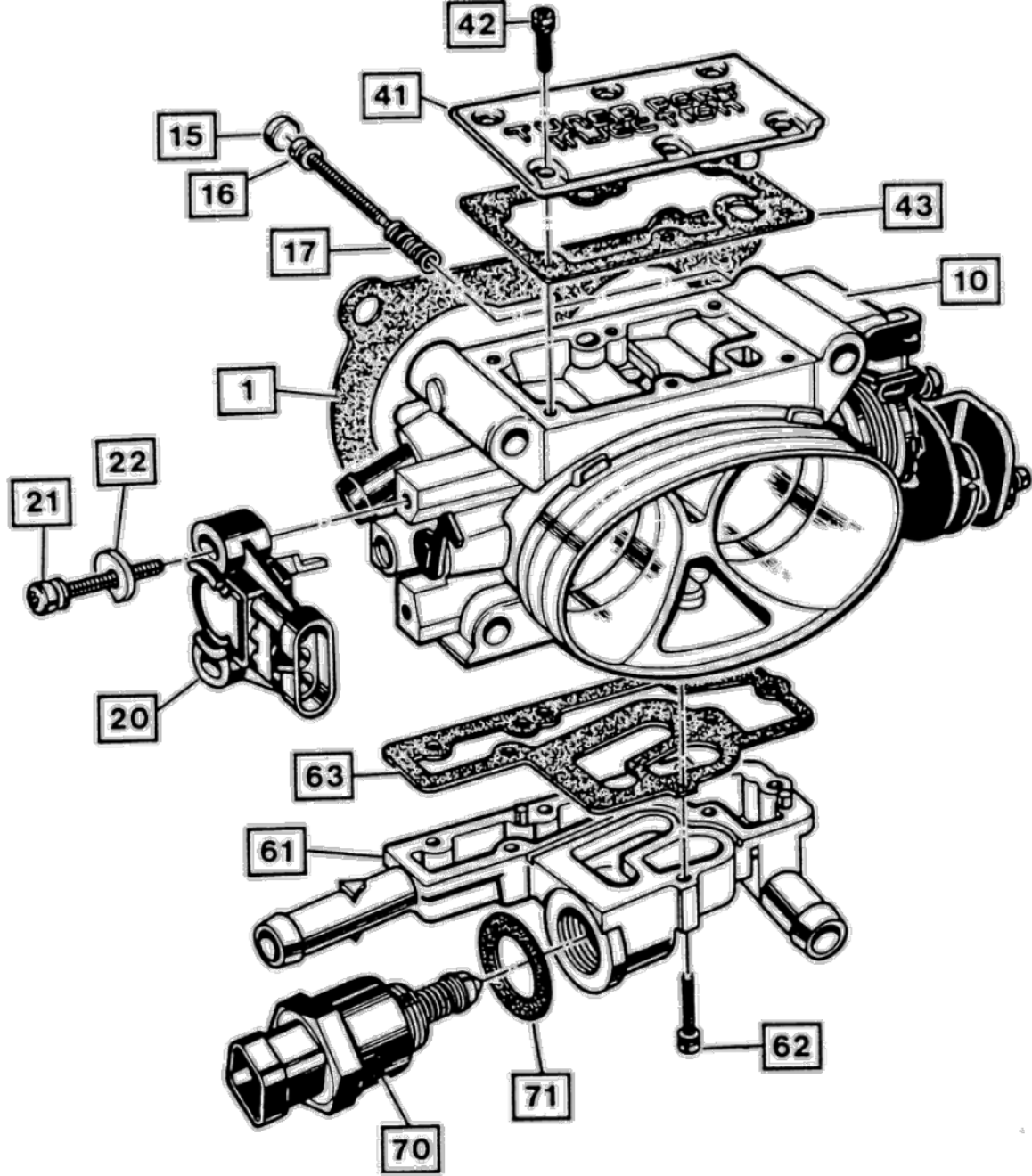


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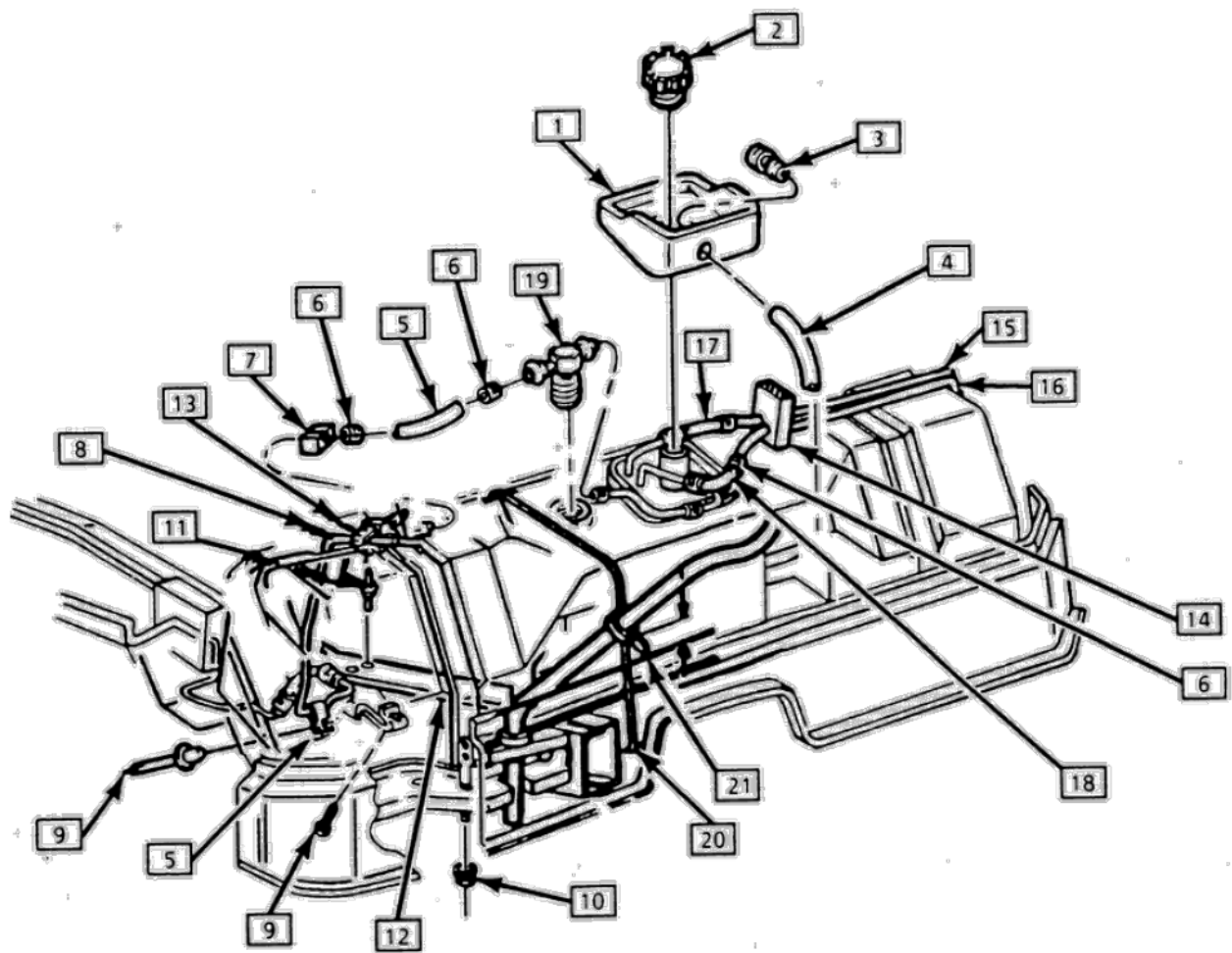


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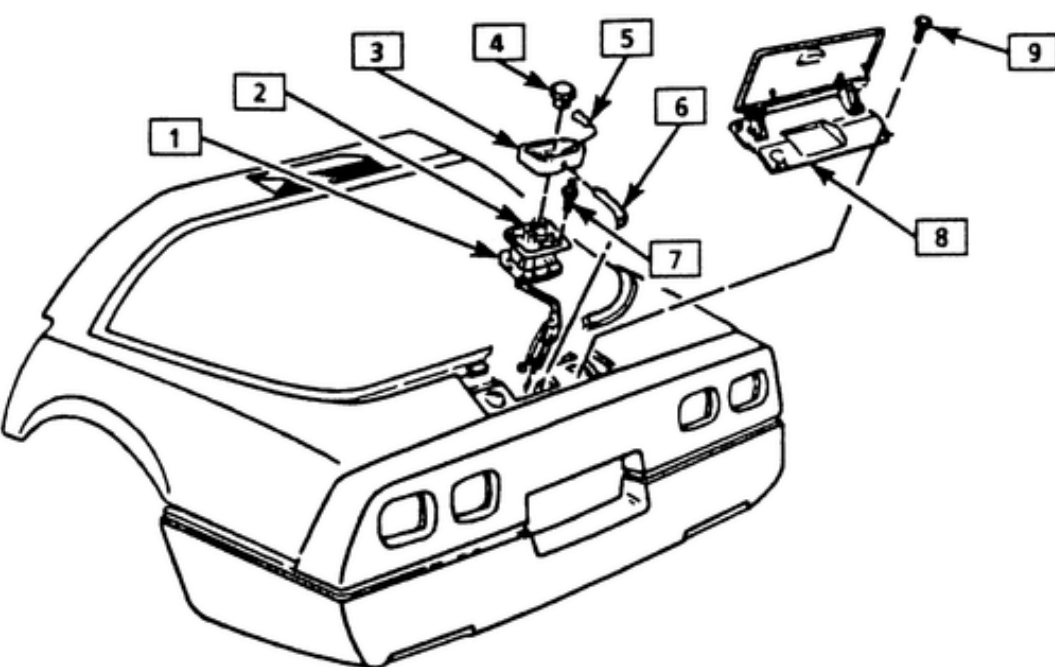




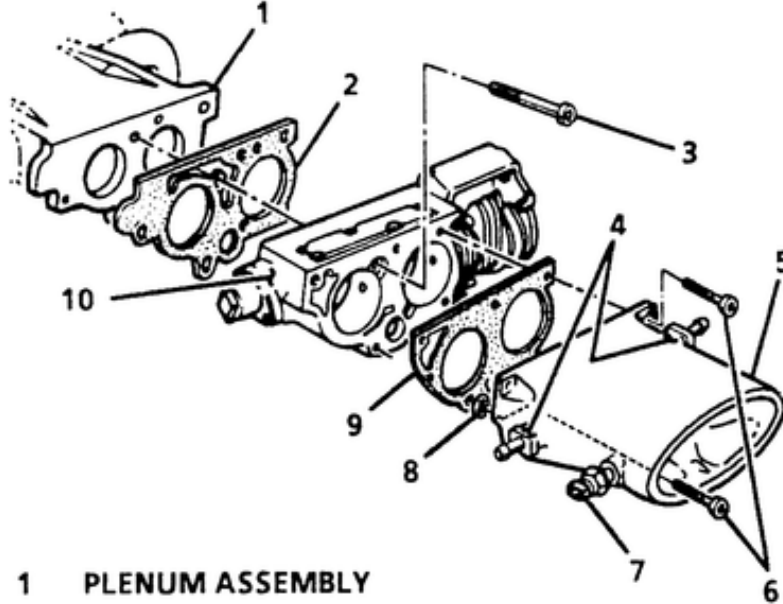
1	Gasket - Flange	41	Cover - Clean Air
10	Throttle Body Assembly	42	Screw Assembly - Clean Air Cover Attaching
15	Plug - Idle Stop Screw	43	Gasket - Clean Air Cover
16	Screw Assembly - Idle Stop	61	IACV / Coolant Cover Assembly
17	Spring - Idle Stop Screw Assembly	62	Screw Assembly - IACV Cover Assembly to Throttle Body
20	Sensor - Throttle Position (TPS)	63	Gasket - IACV / Coolant Cover to Throttle Body
21	Screw Assembly - TPS Attaching	70	Valve Assembly - Idle Air Control (IAC)
22	Retainer - TPS Attaching Screw	71	Gasket - IAC Valve Assembly



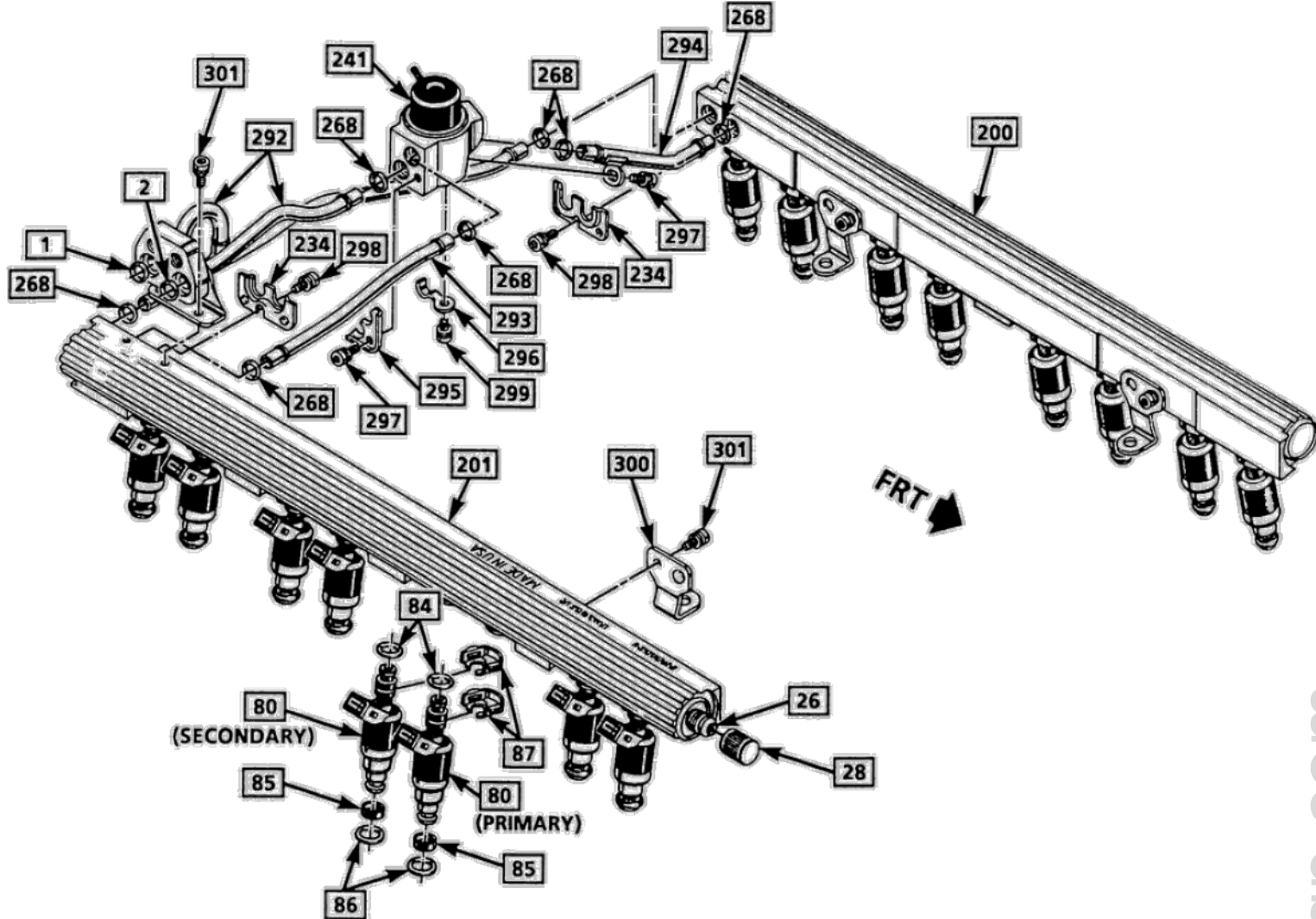
- | | | | |
|----|-----------------------|----|---------------------------------|
| 1 | FILLER NECK HOUSING | 11 | RIVET |
| 2 | FUEL CAP | 12 | SUPPORT |
| 3 | NIPPLE | 13 | STRAP FUEL VAPOR RR PIPE |
| 4 | DRAIN HOSE | 14 | RETAINER |
| 5 | FUEL VAPOR PIPE CLAMP | 15 | FUEL FEED PIPE |
| 6 | CLAMP | 16 | FUEL RETURN PIPE |
| 7 | RETAINER | 17 | FUEL FEED HOSE |
| 8 | VAPOR PIPE | 18 | FUEL RETURN HOSE |
| 9 | RIVET | 19 | FUEL VAPOR CONNECTOR |
| 10 | NUT | 20 | TETHER ASM (STRAP) |
| | | 21 | STRAP - FUEL TANK HOUSING DRAIN |



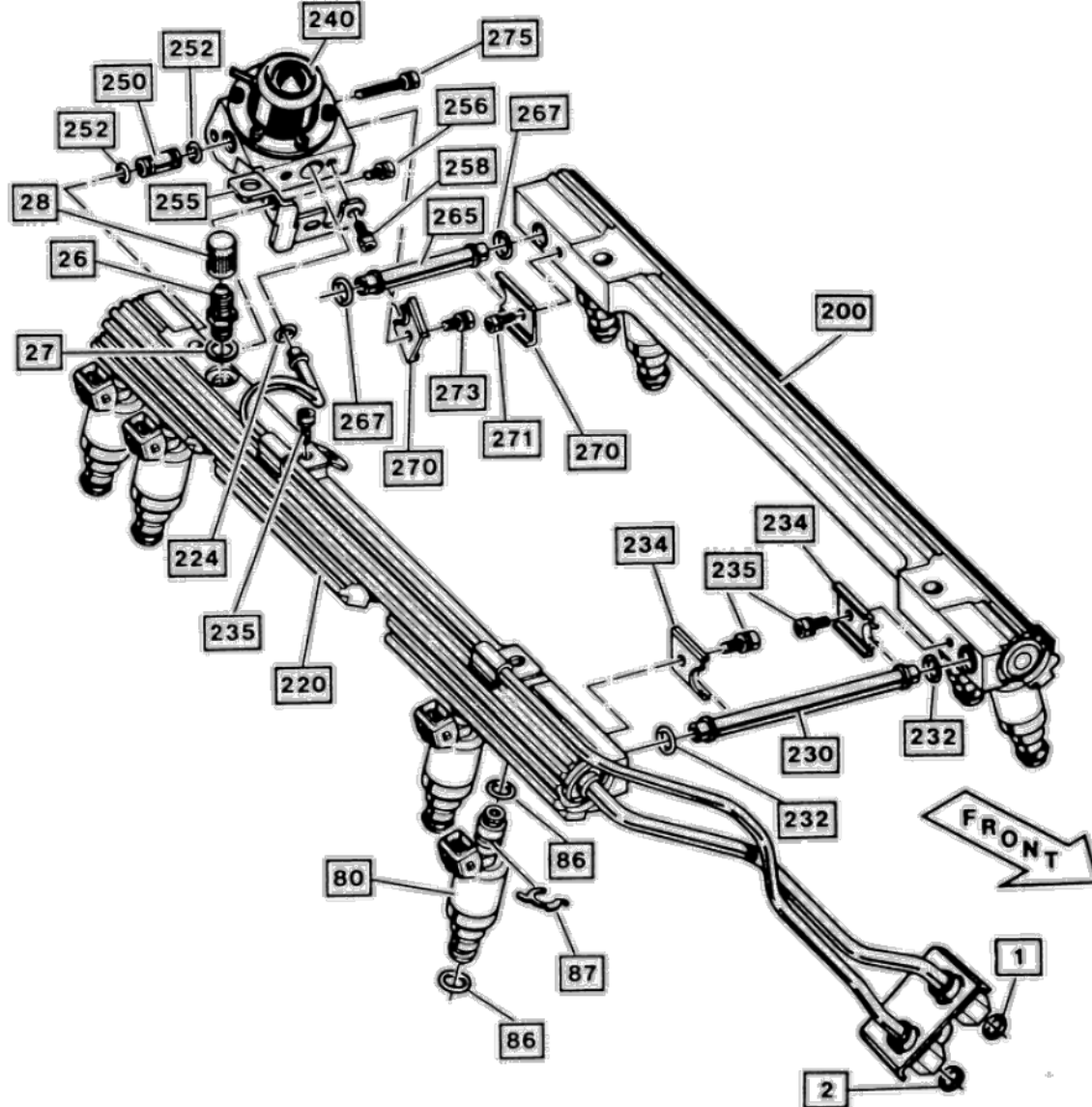
- 1** GASKET
- 2** FUEL LEVEL METER ASSEMBLY
- 3** FILLER NECK HOUSING
- 4** FUEL FILLER CAP
- 5** NIPPLE
- 6** DRAIN HOSE
- 7** SCREW ASSEMBLY (WITH O-RING)
5 N·m (45 lb. in.)
- 8** FILLER DOOR BEZEL
- 9** SCREW



- 1 **PLENUM ASSEMBLY**
- 2 **GASKET - PLENUM TO THROTTLE BODY**
- 3 **BOLT - THROTTLE BODY**
- 4 **FITTING - VENTILATION BREATHER HOSE**
- 5 **EXTENSION - THROTTLE BODY**
- 6 **SCREW - THROTTLE BODY EXTENSION**
- 7 **SENSOR - INTAKE AIR TEMPERATURE (IAT)**
- 8 **RETAINER - THROTTLE BODY EXTENSION SCREW
(INSIDE SCREWS ONLY)**
- 9 **GASKET - THROTTLE BODY TO
THROTTLE BODY EXTENSION**
- 10 **BODY ASSEMBLY - THROTTLE**

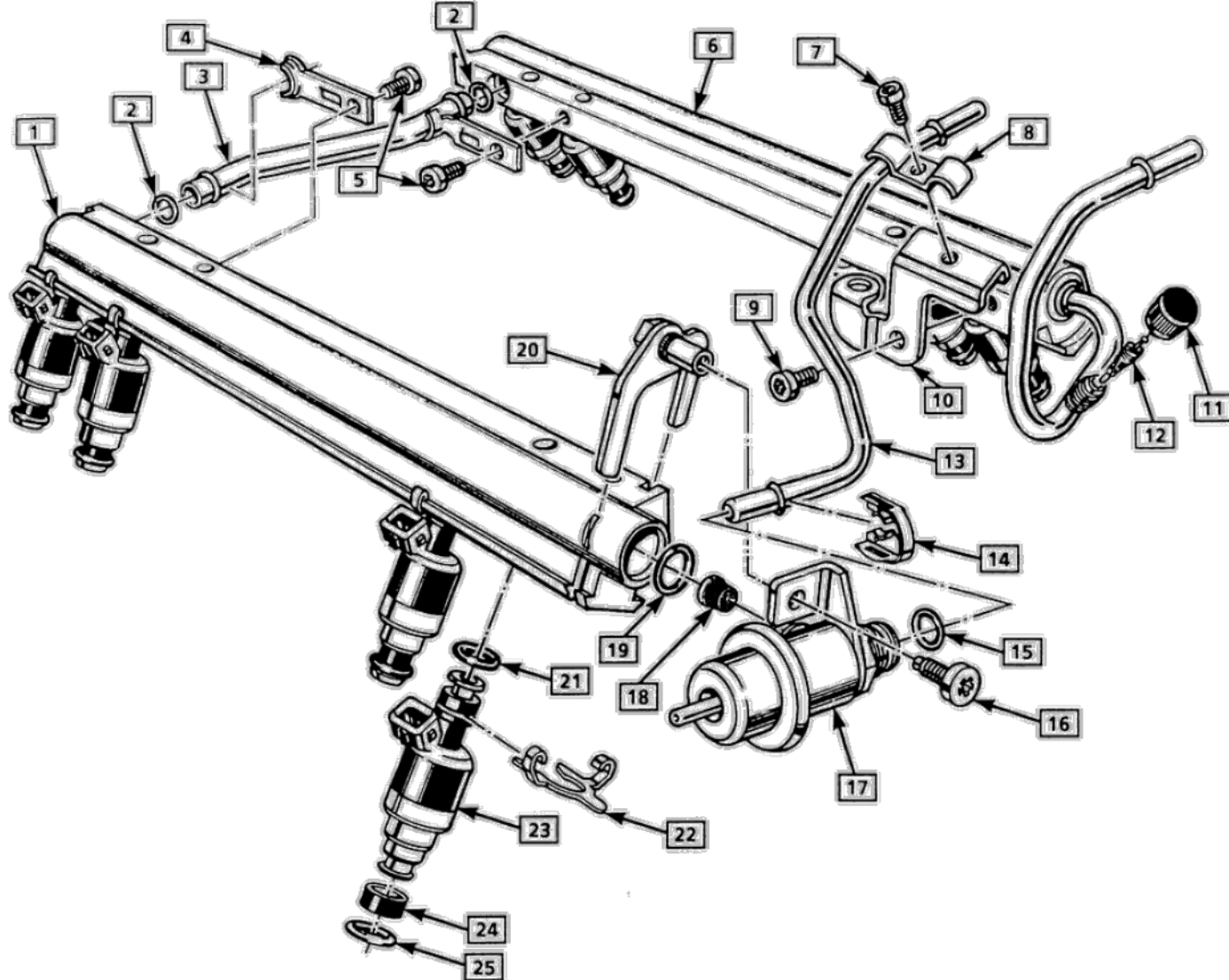


- | | |
|---|--|
| 1 O-RING - FUEL INLET LINE | 241 REGULATOR ASSEMBLY - FUEL PRESSURE |
| 2 O-RING - FUEL RETURN LINE | 268 SEAL - O-RING |
| 26 CONNECTION ASSEMBLY - FUEL PRESSURE | 292 TUBE ASSEMBLY - FUEL INLET AND OUTLET |
| 28 CAP - FUEL PRESSURE CONNECTION ASSEMBLY | 293 TUBE - FUEL RETURN (RH) |
| 80 INJECTOR ASSEMBLY - FUEL:
(P) PRIMARY, (S) SECONDARY | 294 TUBE - FUEL RETURN (LH) |
| 84 O-RING - UPPER INJECTOR (BLACK) | 295 RETAINER - REGULATOR TUBE |
| 85 BACKUP - O-RING | 296 RETAINER - FUEL INLET TUBE |
| 86 O-RING - LOWER INJECTOR (BROWN) | 297 SCREW - FUEL RETURN TUBE RETAINER ATTACHING |
| 87 CLIP - INJECTOR RETAINER | 298 SCREW - CROSSOVER TUBE RETAINER ATTACHING |
| 200 RAIL ASSEMBLY - FUEL (LH) | 299 SCREW - FUEL INLET TUBE RETAINER ATTACHING |
| 201 RAIL ASSEMBLY - FUEL (RH) | 300 BRACKET - FUEL RAIL MOUNTING |
| 234 RETAINER - CROSSOVER TUBE | 301 SCREW - BRACKET ATTACHING |

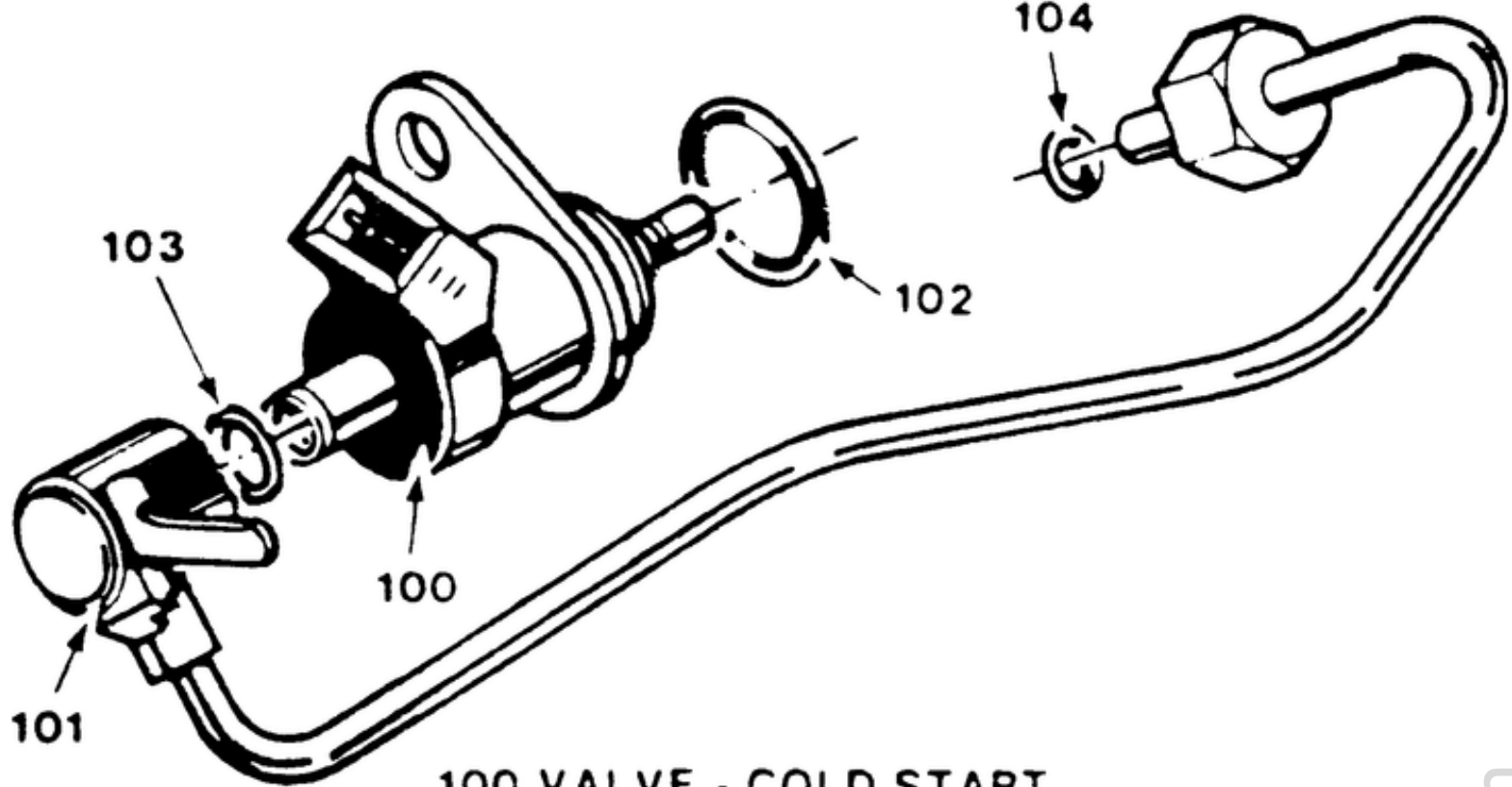


1	O-ring - Fuel Inlet Line
2	O-ring - Fuel Return Line
26	Fuel Pressure Connection Assembly
27	Seal - Fuel Pressure Connection
28	Cap - Fuel Pressure Connection
80	MPFI Injector Assembly
86	Seal - O-ring - Injector
87	Clip - Injector Retainer
200	Fuel Rail and Plug Assembly (LH)
220	Fuel Rail and Tube Assembly (RH)
224	Seal - O-ring - Fuel Outlet Tube
230	Tube - Front Crossover
232	Seal - O-ring - Front Crossover Tube
234	Retainer - Crossover Tube

235	Screw Assembly - Retainer Attaching
240	Pressure Regulator and Base Assembly
250	Connector - Base to Rail
252	Seal - O-ring - Connector
255	Bracket - Pressure Regulator and Base Assembly
256	Screw Assembly - Bracket to Rail Attaching
258	Screw Assembly - Bracket to Base Attaching
265	Tube - Rear Crossover
267	Seal - O-ring - Crossover Tube
270	Retainer - Rear Crossover Tube
271	Screw Assembly - Retainer to LH Rail
273	Screw Assembly - Retainer to Base
275	Screw Assembly - Base to RH Rail



- | | |
|--|--|
| [1] RAIL ASSEMBLY - LH FUEL | [14] CLIP - FUEL OUTLET TUBE RETAINER |
| [2] O-RING - FUEL CROSSOVER TUBE | [15] O-RING - FUEL OUTLET TUBE |
| [3] TUBE ASSEMBLY - FUEL CROSSOVER | [16] SCREW - PRESSURE REGULATOR ATTACHING |
| [4] RETAINER - CROSSOVER TUBE | [17] REGULATOR ASSEMBLY - FUEL PRESSURE |
| [5] SCREW - CROSSOVER TUBE RETAINER ATTACHING | [18] SCREEN - FILTER |
| [6] RAIL ASSEMBLY - RH FUEL | [19] O-RING - FUEL INLET FITTING |
| [7] SCREW - INLET/OUTLET FUEL TUBE RETAINER ATTACHING | [20] RETAINER AND SPACER ASSEMBLY |
| [8] RETAINER - INLET/OUTLET FUEL TUBE | [21] O-RING - UPPER INJECTOR |
| [9] SCREW - INLET/OUTLET FUEL TUBE BRACKET ATTACHING | [22] CLIP - INJECTOR RETAINER |
| [10] BRACKET - INLET/OUTLET FUEL TUBE | [23] INJECTOR ASSEMBLY - FUEL |
| [11] CAP - FUEL PRESSURE CONNECTION | [24] BACKUP - O-RING |
| [12] VALVE ASSEMBLY - FUEL PRESSURE CONNECTION | [25] O-RING - LOWER INJECTOR |
| [13] TUBE ASSEMBLY - FUEL OUTLET | |



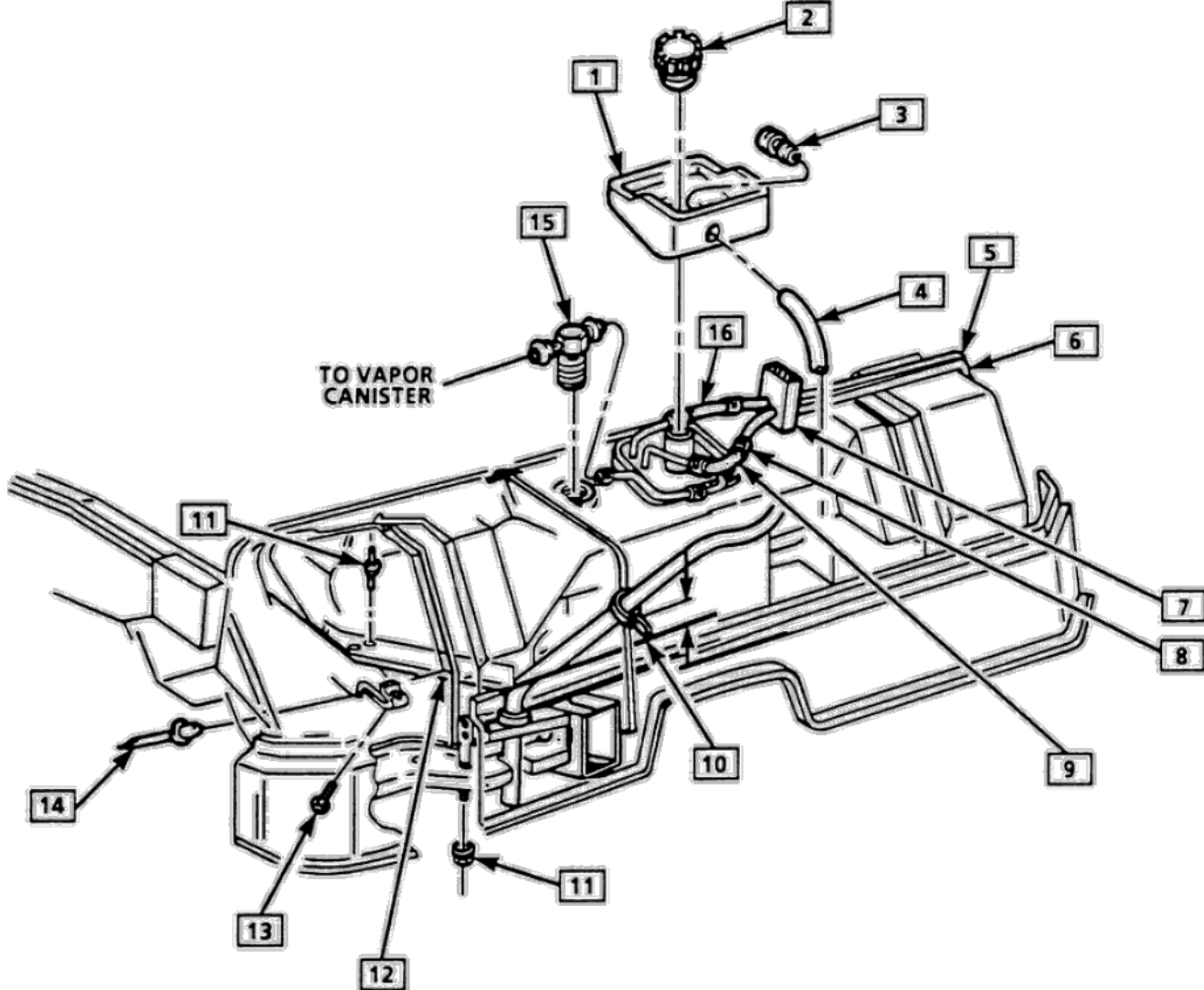
100 VALVE - COLD START

101 TUBE AND BODY ASSEMBLY

102 O-RING SEAL - VALVE

103 O-RING SEAL - BODY

104 O-RING SEAL - TUBE



1 FILLER NECK HOUSING

2 FUEL FILLER CAP

3 NIPPLE

4 DRAIN HOSE

5 FUEL FEED PIPE

6 FUEL RETURN PIPE

7 RETAINER

8 CLAMP

9 FUEL RETURN HOSE

10 STRAP - FUEL TANK HOUSING DRAIN

11 NUT

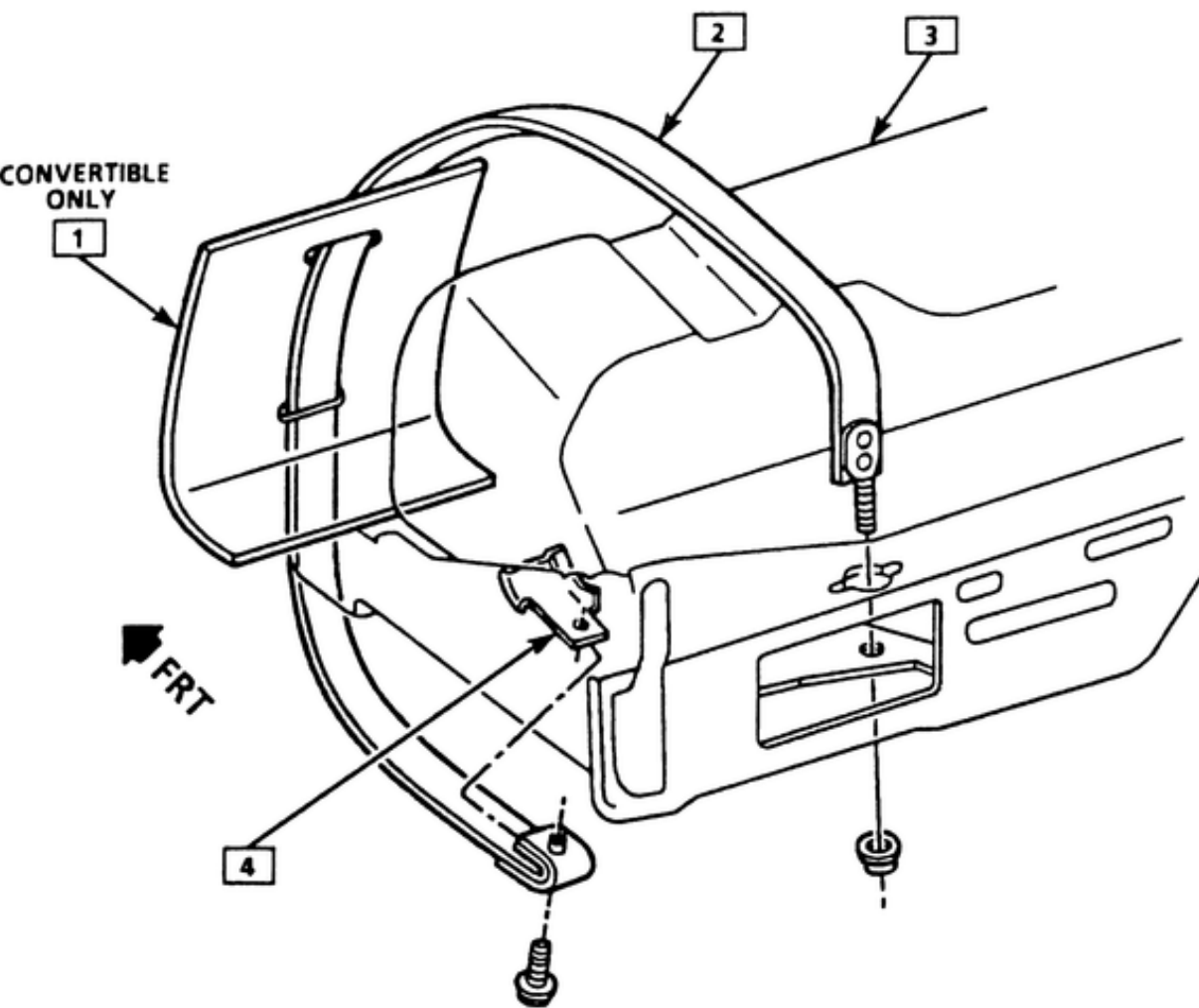
12 SUPPORT

13 BOLT

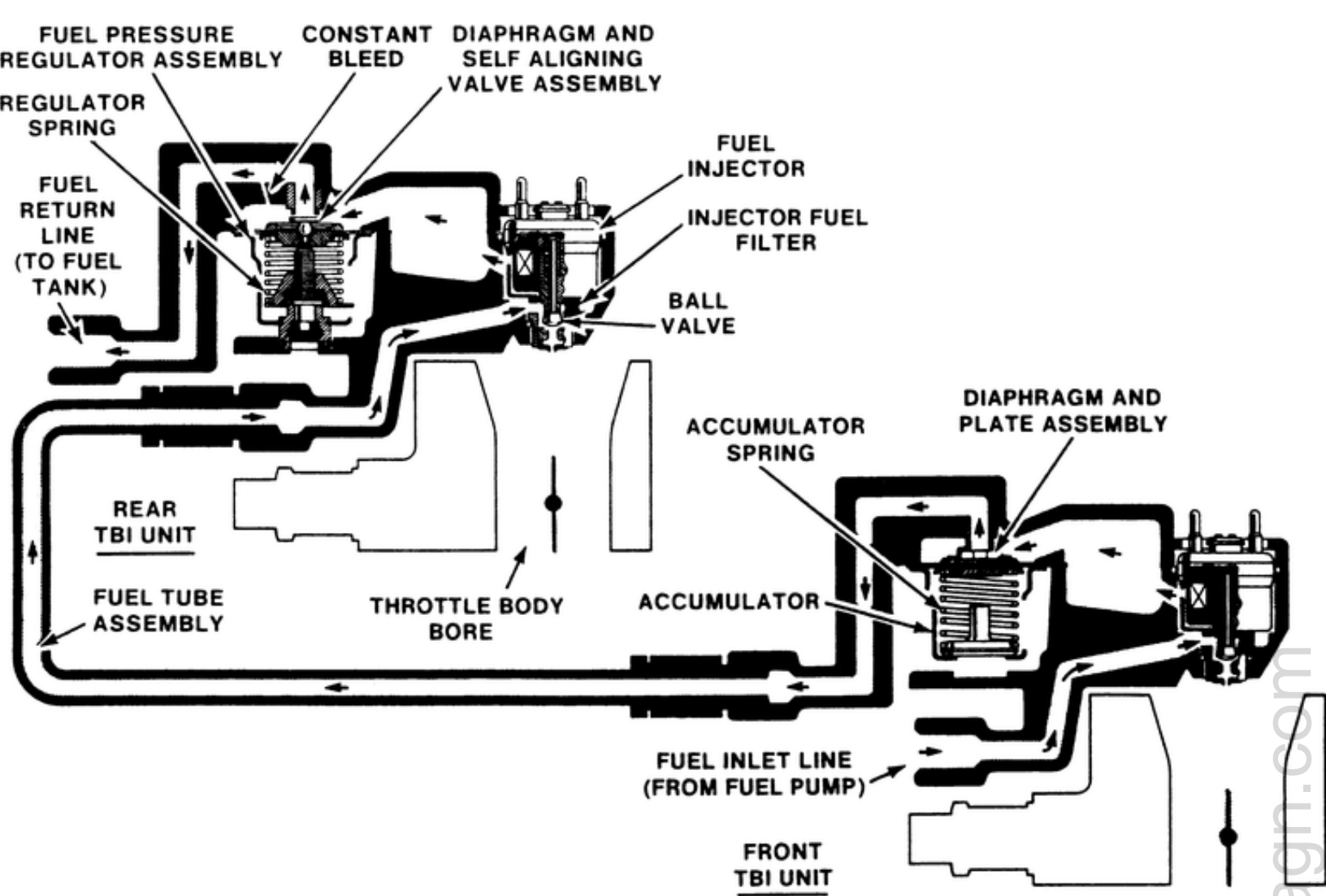
14 RIVET

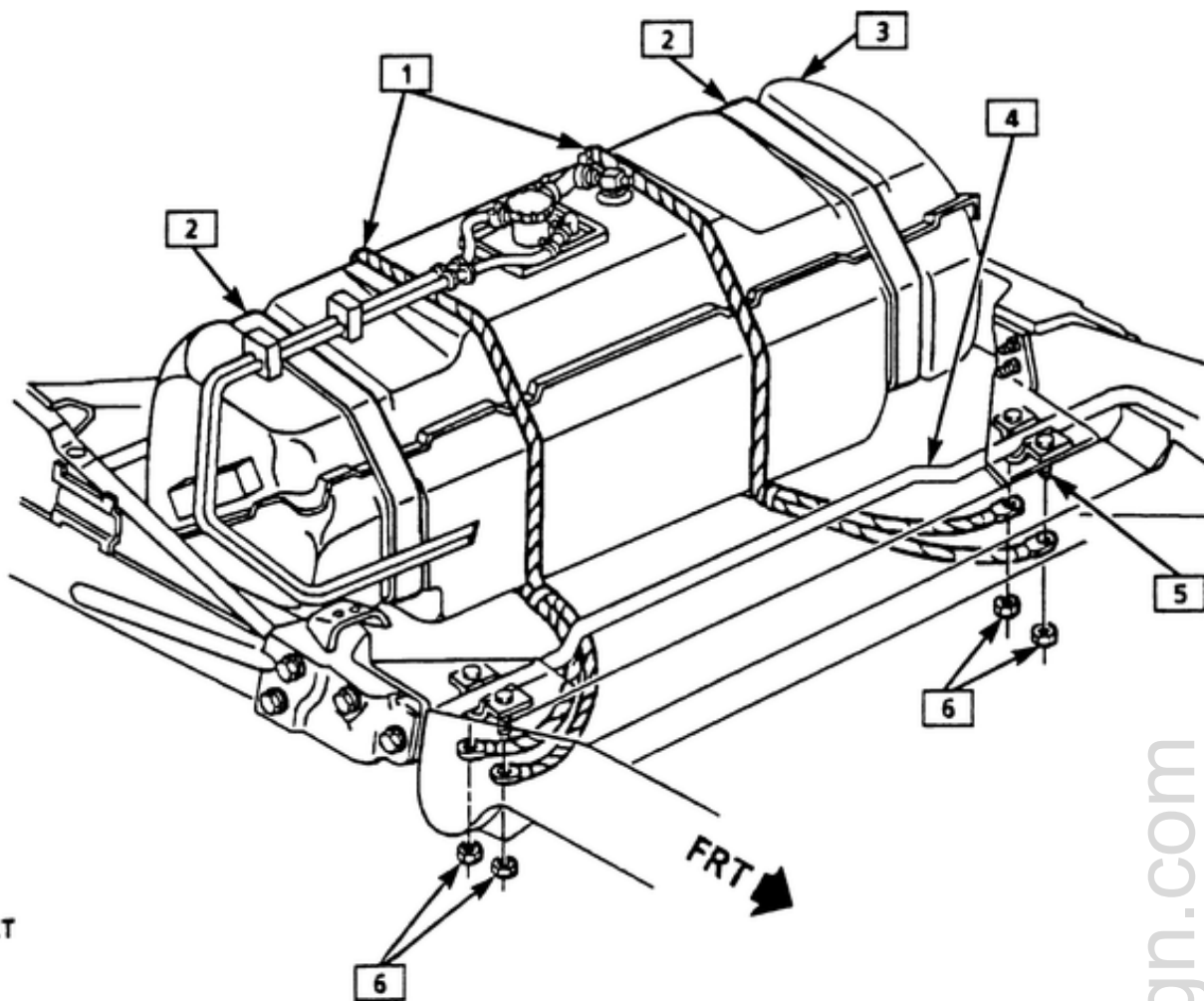
15 FUEL VAPOR CONNECTOR

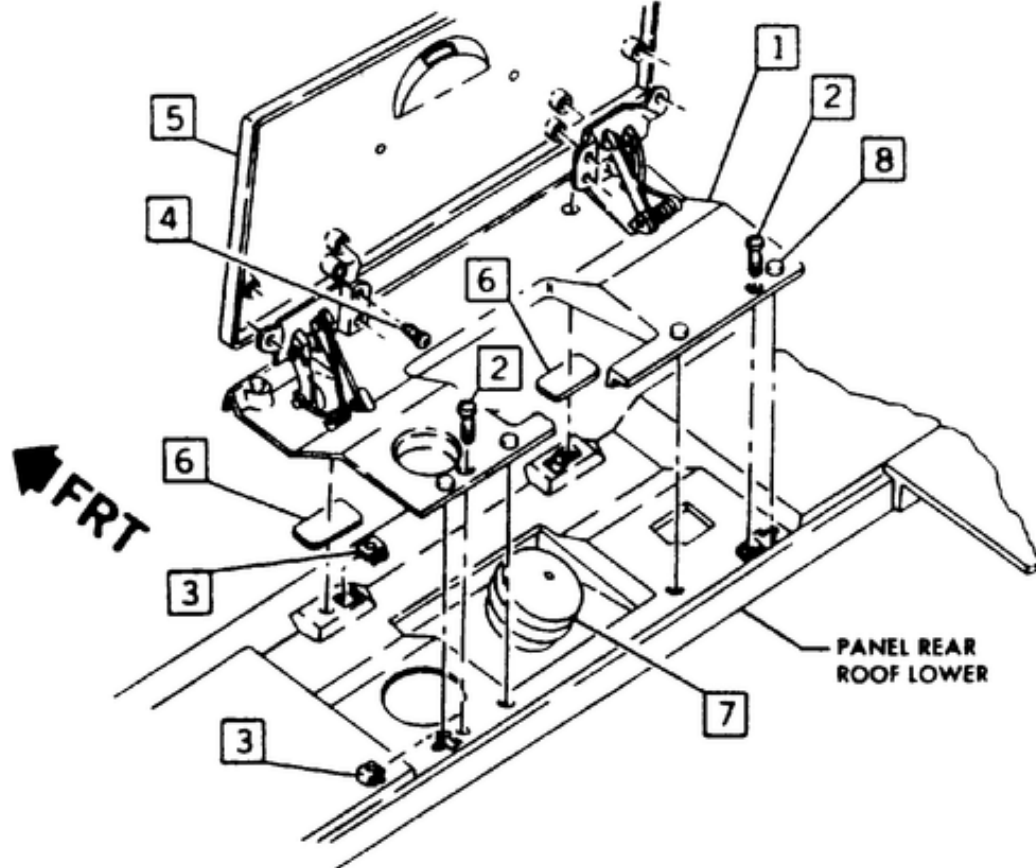
16 FUEL FEED HOSE



- 1 INSULATOR
- 2 STRAP
- 3 FUEL TANK
- 4 BRACKET FRAME







1 FILLER DOOR BEZEL

2 SCREW

3 "U" NUT

4 SCREW

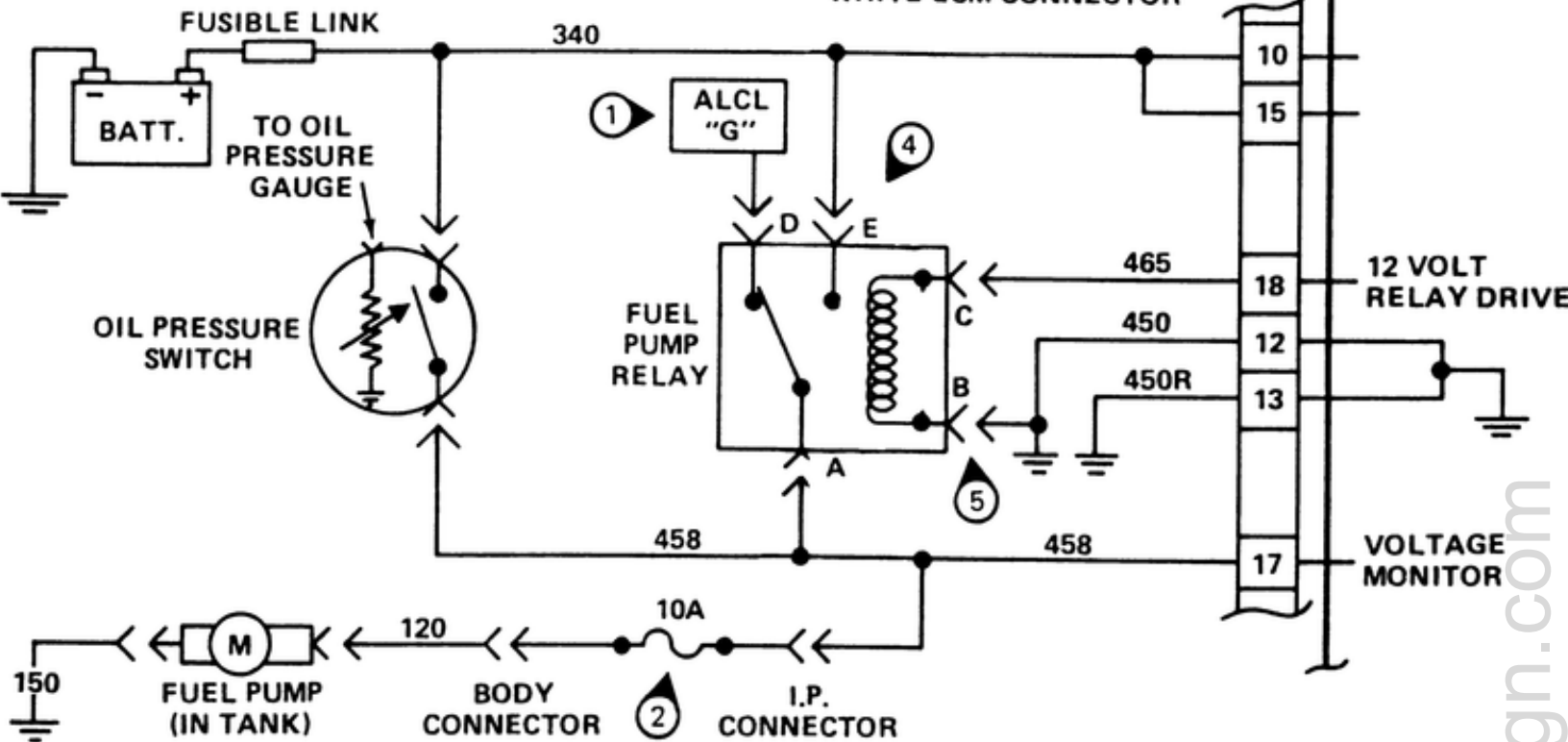
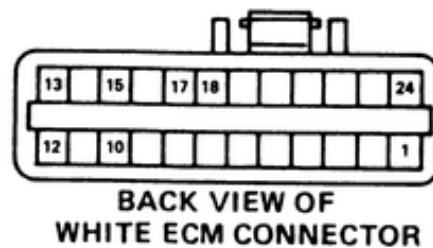
5 DOOR

6 SEALING STRIP (2 REQ'D)
MUST COMPLETELY COVER
"U" NUT ACCESS HOLE
AND SCREW HOLE

7 FUEL CAP

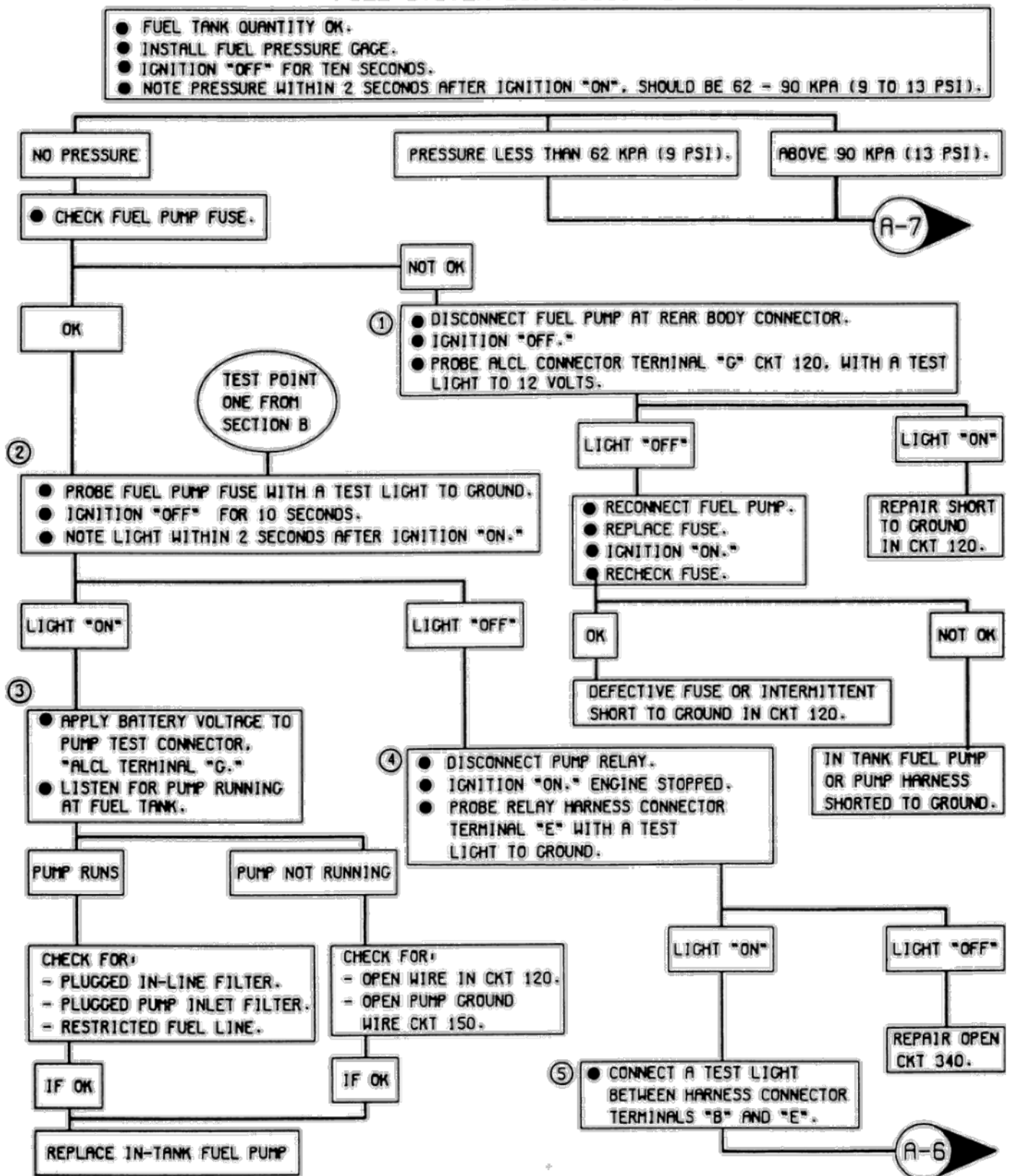
8 BUMPER

PANEL REAR
ROOF LOWER



NOTICE: EFI SYSTEM UNDER PRESSURE.
TO AVOID FUEL SPILLAGE, REFER TO FIELD
SERVICE PROCEDURES FOR TESTING OR
MAKING REPAIRS REQUIRING DISASSEMBLY
OF FUEL LINES OR FITTINGS.

1984
CHART A-5
FUEL INJECTION
FUEL SYSTEM DIAGNOSIS (1 OF 3)

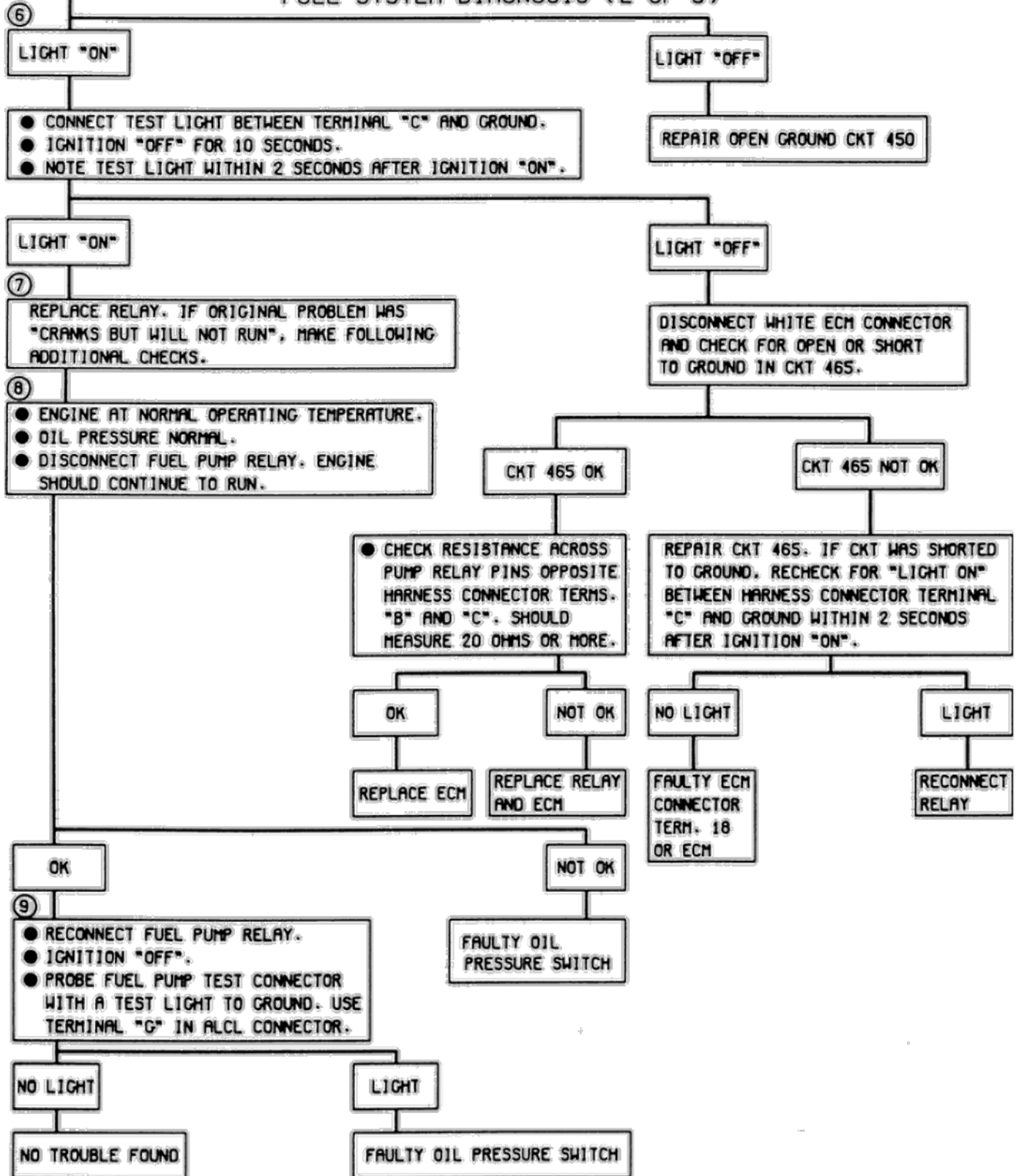


CLEAR CODES AND CONFIRM "CLOSED LOOP" OPERATION AND NO "CHECK ENGINE" LIGHT.

CHART A-6

FUEL INJECTION

FUEL SYSTEM DIAGNOSIS (2 OF 3)



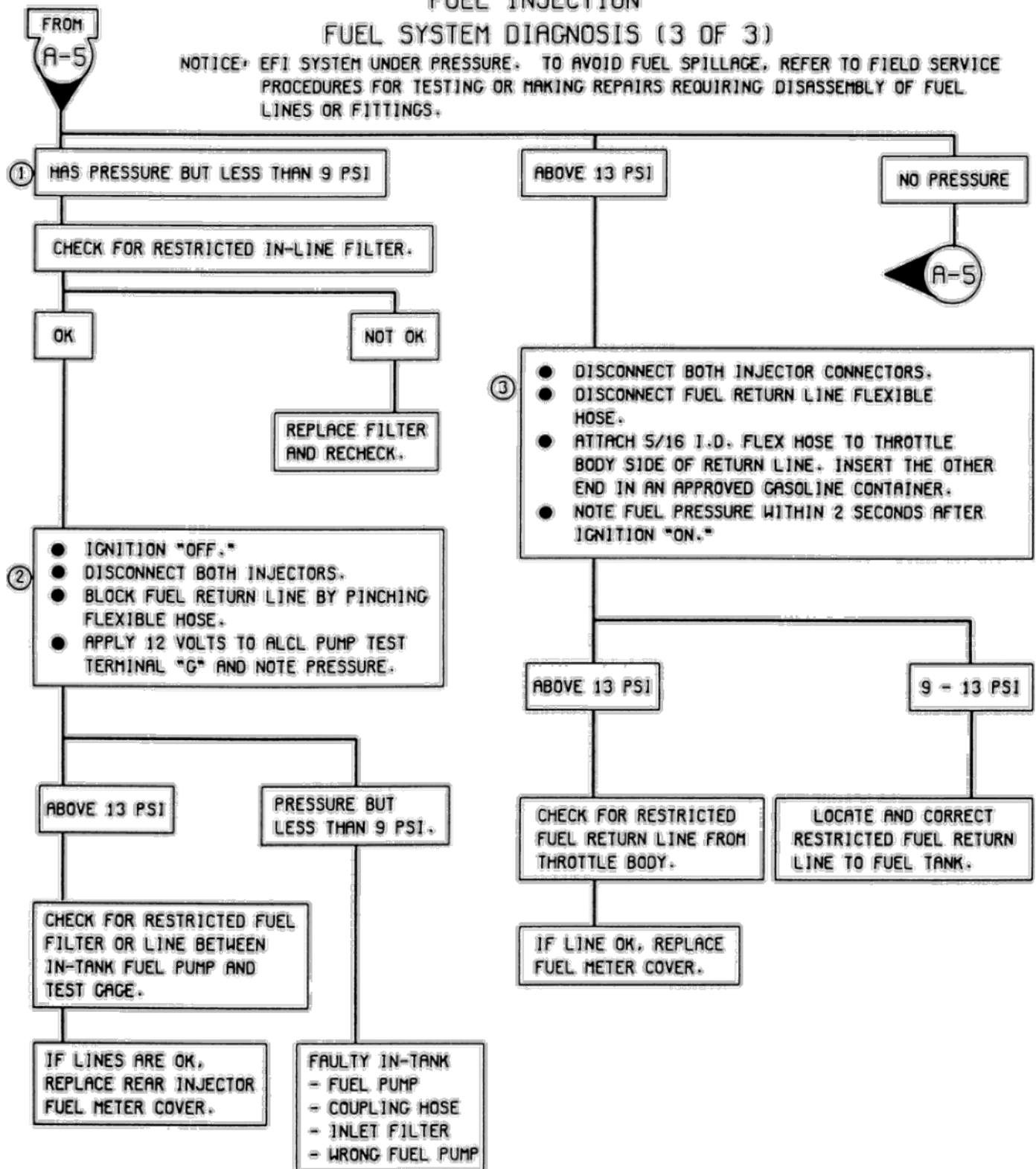
CLEAR CODES AND CONFIRM "CLOSED LOOP" OPERATION AND NO "CHECK ENGINE" LIGHT.

CHART A-7

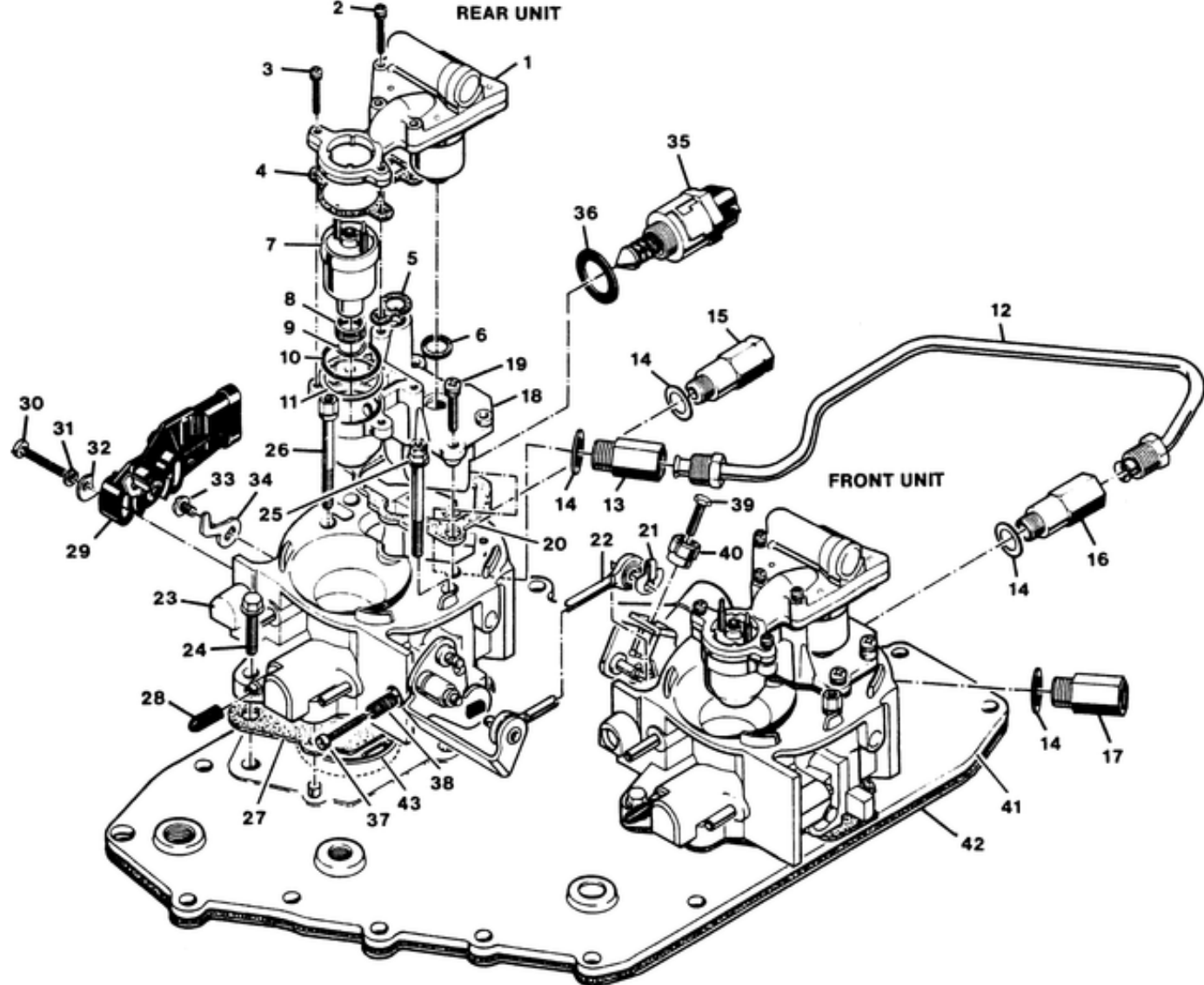
FUEL INJECTION

FUEL SYSTEM DIAGNOSIS (3 OF 3)

NOTICE: EFI SYSTEM UNDER PRESSURE. TO AVOID FUEL SPILLAGE, REFER TO FIELD SERVICE PROCEDURES FOR TESTING OR MAKING REPAIRS REQUIRING DISASSEMBLY OF FUEL LINES OR FITTINGS.



CLEAR CODES AND CONFIRM "CLOSED LOOP" OPERATION AND NO "CHECK ENGINE" LIGHT.



ALL PARTS ARE COMMON BETWEEN FRONT AND REAR TBI UNITS EXCEPT THOSE MARKED F (FRONT) OR R (REAR). REAR UNIT EXPLODED VIEW IS TYPICAL ILLUSTRATION.

FUEL METERING PARTS		23 THROTTLE BODY ASSEMBLY
1 FUEL METER COVER & PRESSURE REGULATOR-R		24 BOLT-TBI ATTACHING-SHORT
2 SCREW & WASHER ASM.-LONG (3)		25 STUD/BOLT-TBI/AIR CLEANER ATTACHING
3 SCREW & WASHER ASM.-SHORT (2)		26 STUD-TBI & AIR CLEANER ATTACHING
4 GASKET-FUEL METER COVER		27 GASKET-TBI MOUNTING
5 GASKET-FUEL METER OUTLET		28 CAP-TUBE
6 DUST SEAL-PRESSURE REGULATOR-R		29 THROTTLE POSITION SENSOR (TPS)-R
7 FUEL INJECTOR		30 SCREW-TPS ATTACHING (2)-R
8 FILTER-FUEL INJECTOR		31 WASHER-TPS SCREW (2)-R
9 SEAL-SMALL "O" RING		32 RETAINER-TPS (2)-R
10 SEAL-LARGE "O" RING		33 SCREW-TPS LEVER ATTACHING-R
11 BACK-UP WASHER-FUEL INJECTOR		34 LEVER-TPS-R
12 FUEL TUBE ASSEMBLY		35 IDLE AIR CONTROL (IAC) ASSEMBLY
13 NUT-FUEL INLET-R		36 GASKET-IAC ASSEMBLY
14 GASKET-FUEL NUT (2)		37 SCREW-THROTTLE STOP
15 NUT-FUEL RETURN-R		38 SPRING-THROTTLE STOP SCREW
16 NUT-FUEL RETURN-F		39 SCREW-THROTTLE SYNCHRONIZING-F
17 NUT-FUEL INLET-F		40 COLLAR-THROTTLE SYNCHRONIZING SCREW-F
18 FUEL METER BODY ASM.		
19 SCREW & WASHER ASM.-ATTACHING (3)		INLET MANIFOLD PARTS
20 GASKET-FUEL METER BODY		41 INLET MANIFOLD COVER
THROTTLE BODY PARTS		42 GASKET-INLET MANIFOLD COVER
21 CLIP-THROTTLE ROD RETAINING-F		43 THROTTLE BORE TUBE (OR SWIRL PLATE)-MANIFOLD COVER
22 THROTTLE ROD & BEARING ASSEMBLY-R		

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

When there is a problem starting or driving a vehicle, two of the most important checks involve the ignition and the fuel systems. The questions most mechanics attempt to answer first, "is there spark?" and "is there fuel?" will often lead to solving most basic problems. For ignition system diagnosis and testing, please refer to the information on engine electrical components and ignition systems found earlier in this manual. If the ignition system checks out (there is spark), then you must determine if the fuel system is operating properly (is there fuel?).

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

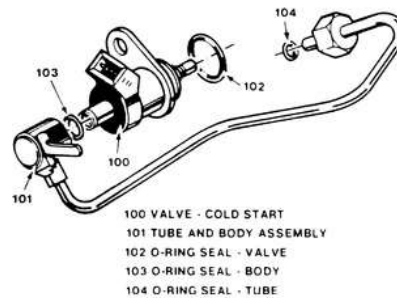
Fuel Delivery: FI | Fuel: GAS

5.7L (VIN 8) Engines

1985–88 VEHICLES

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure, as outlined earlier in this section.
3. Remove the intake plenum, as outlined in Section 3 of this manual.
4. Disconnect the brake booster line.
5. Remove the tube and body assembly at the fitting on the fuel rail.
6. Detach the electrical connector from the cold start valve.
7. Disconnect the PCV hose.
8. Unfasten the cold start valve retaining bolt, then remove the valve from the fuel rail and intake manifold.
9. If necessary, disassemble as follows:
 - A. Raise the tab on the tube body to clear the electrical connector and unscrew the cold start valve.
 - B. Remove and discard the O-ring seals from the tube and body assembly, cold start valve and fuel rail fitting.

Fig. 1: The cold start valve is used on 1985–88 vehicles with the 5.7L (VIN 8) engine



To install:

10. If disassembled, perform the following:
 - A. Lightly lubricate new O-ring seals with clean engine oil and install onto the end of the cold start valve, inside the body of the tube and body assembly, and up against the collar to the tube and body assembly.
 - B. Install the cold start valve onto the tube and body assembly. Screw the valve in until it bottoms, then back off until the hole in the mounting lug on the valve will be aligned properly with the hole in the fuel rail when mounted.
 - C. Bend the tang over the valve to lock it in place.
 - D. Clean the areas around the valve and connection.
11. Position the cold start valve into the intake manifold. Install the retaining bolt and tighten to 20 ft. lbs. (27 Nm).
12. Connect the PCV hose.
13. Install the tube and body to the fitting on the fuel rail. Tighten the nut on the fitting to 20 ft. lbs. (27 Nm).
14. Connect the brake booster line, then attach the electrical connector to the cold start valve.
15. Connect the negative battery cable, then with the engine **OFF**, turn the ignition to the **ON** position and check for fuel leaks. Disconnect the negative battery cable.
16. Install the intake plenum, then connect the negative battery cable.

1990 Chevrolet CORVETTE

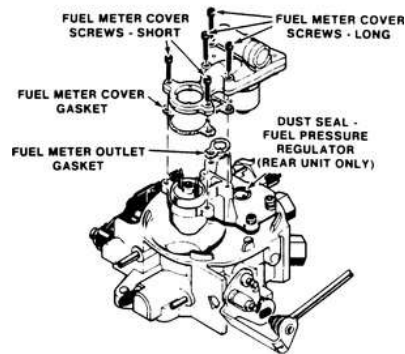
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

NOTE: Before performing any service on the front or rear TBI unit, you must place the unit in a suitable holding fixture such as J-9789-118, BT-30-15, or equivalent. If you don't place the unit in a suitable fixture, the throttle valve may be damaged.

1. Disconnect the negative battery cable.
2. Remove the TBI unit from the vehicle, and place it in a suitable holding fixture.
3. Remove the fuel meter cover, as follows:
 - A. Remove the 5 fuel meter cover attaching screws and lockwashers.

Fig. 1: Exploded view of the fuel meter cover attachment

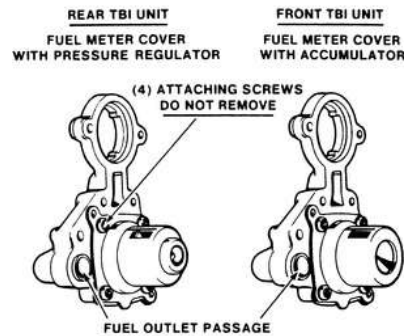


- B. Lift off the fuel meter cover with the fuel pressure regulator (rear unit) or accumulator (front unit), noting their positions for reassembly.
- C. Remove and discard the fuel outlet passage only. Leave the fuel meter cover gasket on the fuel meter body.

CAUTION

Do NOT remove the 4 screws securing the fuel pressure regulator or accumulator to the fuel meter cover. The regulator or accumulator includes a large spring under heavy compression which, if accidentally released, could cause personal injury. The fuel meter cover is serviced as a complete assembly only. On the rear unit, the fuel meter cover includes the fuel pressure regulator which was calibrated and plugged at the factory.

Fig. 2: Bottom view of the front and rear fuel meter covers



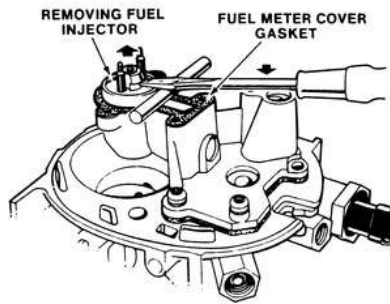
NOTE: Do not immerse the fuel meter cover (with the pressure regulator or accumulator) in any type of cleaner. Immersion will damage the internal diaphragms and gaskets.

- D. Remove the foam pressure regulator sealing ring (dust seal) from the rear throttle body.

NOTE: When removing the injector, be careful to avoid damaging the electrical terminals on top of the injector, injector fuel filter and nozzle. Do NOT use pliers to remove the injector, as this could cause damage. The injector cannot be disassembled and is serviced as a complete assembly only. As it is an electrical component, it should not be submerged in any type of cleaner.

4. With the fuel meter cover gasket in place to protect the casting, use a suitable prytool and a fulcrum, as shown in the accompanying figure, to carefully lift the injector until it is free from the fuel meter body.

Fig. 3: Carefully pry the fuel injector out of the fuel meter body

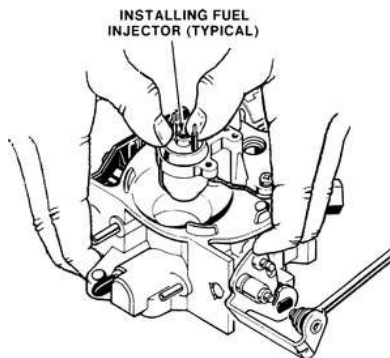


5. Remove the injector. If removing both injectors, make sure to mark them front and rear, so they can be reinstalled in the proper position. The injectors are NOT interchangeable and cannot be switched during installation.
6. Carefully rotate the injector fuel filter back and forth, then remove the filter from the base of the injector.
7. Remove and discard the fuel meter cover gasket.
8. Remove the large O-ring and steel back-up washer in the top counterbore of the fuel meter body injector cavity. Remove the small O-ring located at the bottom of the injector cavity.

To install:

9. Install the fuel filter on the nozzle end of the injector, using a slight twisting motion to position the filter against the injector base. The filter is cone-shaped. The large end of the filter faces up (toward the electrical terminals), so that the filter covers the raised rib at the base of the injector.

Fig. 4: Installation of the fuel injector



10. Lubricate the new small O-ring with automatic transmission fluid. Push the small O-ring on the nozzle end of the injector, pressing the ring up against the injector fuel filter.
NOTE: Do not reverse this procedure and install the back-up washer and O-ring after the injector is in the cavity. This would prevent sealing of the O-ring in the cavity counterbore.
11. Install the steel back-up washer in the top counterbore of the fuel meter body injector cavity. Lubricate a new large O-ring with automatic transmission fluid. Install the O-ring directly above the back-up washer, and press the O-ring down in the cavity counterbore. Make sure the O-ring is located properly, and that it is flush with the top of the fuel meter body casting surface.
12. Install the injector in the cavity (making sure it is the proper injector), aligning the raised lug on the injector base with the cast-in notch in the fuel meter body. Push down on the injector until it is fully seated in the cavity (the electrical terminals of injector will be approximately parallel to the throttle shaft).
13. Install the fuel meter cover, as follows:
 - A. Install a new dust seal (for the fuel pressure regulator) into the recess on the fuel meter body of the rear unit.
 - B. Install a new fuel meter cover and fuel meter outlet gaskets.
14. Place the fuel meter cover with the fuel pressure regulator on the rear unit, and the fuel meter cover with the accumulator on the front unit. Apply Loctite® 262, or equivalent thread locking compound to the threads on the fuel 5 fuel meter cover attaching screws for each unit. Install the fuel meter cover attaching screws and lockwashers and tighten to 28 inch lbs. (3 Nm). The 2 short screws go next to the fuel injector.

1990 Chevrolet CORVETTE

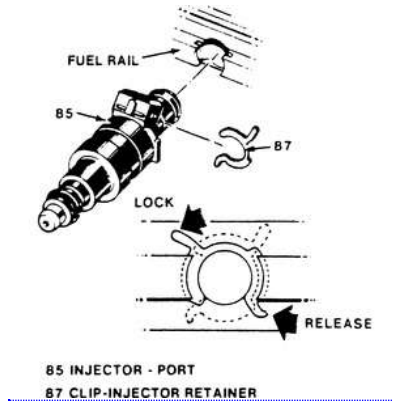
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

5.7L (VIN 8) Engine

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. Remove the intake plenum and runners.
4. Remove the fuel rail assembly, as outlined later in this section.
5. Rotate the injector retaining clip to the release position.

Fig. 1: The injector is secured in the fuel rail socket with a metal retaining clip



6. Remove the injector by pulling it from the fuel rail assembly.
7. Remove and discard the retaining clip, and the O-ring seals from each end of the injector.

To install:

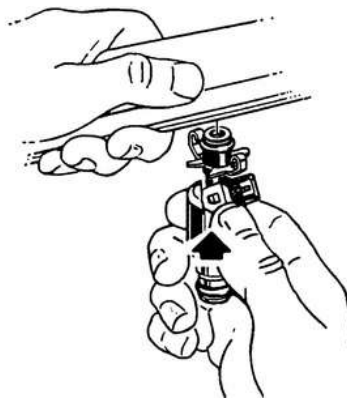
NOTE: Always replace injectors using the identical part number which is inscribed on the old injector.

8. Lightly lubricate new injector O-rings with clean engine oil, then install onto the injector.
9. Install a new injector retaining clip onto the injector.
10. Install the injector to the fuel rail socket with the electrical connector facing outward.
11. Rotate the injector retaining clip to the locked position/
12. Install the fuel rail.
13. Temporarily connect the negative battery cable. With the engine **OFF** and the ignition **ON**, check for fuel leaks. Disconnect the negative battery cable.
14. Install the intake plenum and runners, then connect the negative battery cable.

5.7L (VIN P and 5) Engine

1. Disconnect the negative battery cable and properly relieve fuel system pressure.
2. Remove the fuel rail cover(s).
3. Disengage the quick-connect fittings at the fuel rail feed and return pipes as follows:
 - A. Grasp both ends of a connection and twist $1/4$ turn in each direction to loosen any dirt. Repeat for other fitting.
 - B. While wearing safety glasses, use compressed air to blow out dirt from the fitting.
 - C. Insert a fuel line separator tool, into the female connector, then push inward to release the male connector and repeat for the other fitting.
4. Disconnect the vacuum line at the pressure regulator.
5. Tag and unplug the injector electrical connectors.
6. Remove the fuel rail attaching bolts and carefully remove the fuel rail assembly along with the injectors, from the top of the intake.
7. Rotate the injector retaining clip to the release position and remove the injector from the fuel rail assembly.
8. Remove and discard the O-ring seals from either side of the injector.
9. Remove and discard the injector retaining clip.

Fig. 2: Pulling the fuel injection from the fuel rail — 5.7L (VIN P and 5) engines

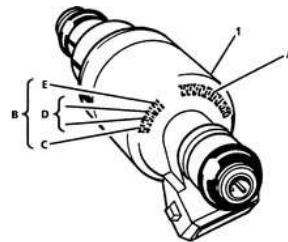


To install:

10. Lubricate the new injector O-rings with clean engine oil and install onto the injector.

NOTE: Always replace injectors using an identical part number as inscribed in the old injector.

Fig. 3: Always make sure you are using the proper part number when installing a new injector



- 1 INJECTOR ASSEMBLY - FUEL
- A PART NUMBER IDENTIFICATION
- B BUILD DATE CODE
- C MONTH 1-9 (JAN-SEPT) O, N, D (OCT, NOV, DEC)
- D DAY
- E YEAR

11. Fasten a new retainer clip onto the fuel injector and install the injector to the fuel rail assembly. Rotate the injector retaining clip to the lock position.
12. Install the fuel rail assembly to the intake manifold. Tighten the attaching bolts to 15 ft. lbs. (20 Nm).
13. Rotate the fuel injectors as necessary to avoid stretching the wire harnesses and connect the injector electrical connections.
14. Connect the vacuum line to the pressure regulator.
15. Apply a few drops of clean engine oil to the male ends of the fuel line quick-connect fittings. Engage the fittings by pushing the connectors together until the retaining tabs snap into place. Pull gently on both sides of each fitting to be sure the connection is secure.
16. Tighten the fuel filler cap and connect the negative battery cable.
17. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks.

5.7L (VIN J) Engine

1. Disconnect the negative battery cable and properly relieve fuel system pressure.
2. Drain the cooling system into a suitable container.
3. Remove the intake plenum assembly.
4. If not done already when removing the intake plenum, disconnect the fuel feed and return lines from the fuel rail. Remove and discard the old O-rings from the fittings. Disconnect the vacuum line to the pressure regulator.
5. Unplug the fuel injector wire connectors.
6. Remove the bolts securing the fuel rail to the injector housing.
7. Carefully remove the fuel rails making sure not to damage the injector connector terminals or spray tips. Remove the spacers, if equipped. Note the routing of the vacuum hoses around the fuel rail before removing the rail.
8. Remove the injector retaining clip, then remove the injector.
9. Remove and discard the injector O-ring seals.

Fig. 4: Exploded view of the fuel rail, injectors, pressure regulator and pressure connection valve — 5.7L (VIN J) engine

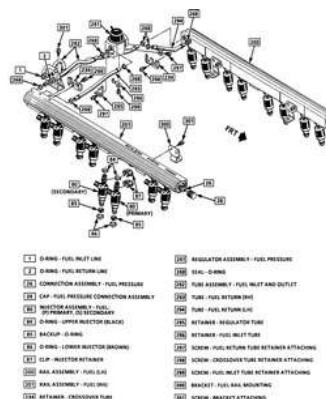
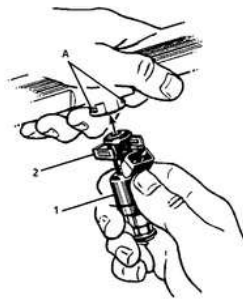


Fig. 5: Installing the fuel injector on the fuel rail



1 INJECTOR ASSEMBLY - FUEL
2 RETAINER CLIP - INJECTOR
A MACHINED SLOTS IN RAIL

To install:

10. Lubricate new injector O-rings with engine oil and install the injector with retaining clip onto fuel rail. Make sure the injector wire connection is facing outward and push the injector onto the rail sufficiently to engage the clip with the machined slots on the rail socket.

NOTE: Each injector is calibrated for a specific flow rate and must be replaced with an identical part number.

11. Install the fuel rail into the injector housing, routing the vacuum lines in their previous positions around the rail.
12. If equipped, be sure the spacers are properly positioned under the rail mounting bracket.
13. Install the fuel rail bolts and tighten to 20 ft. lbs. (26 Nm).
14. Engage the injector electrical connectors, turning the injectors if necessary to avoid stretching the wire harnesses.
15. Install new O-rings to the fuel feed and return pipes.
16. Connect the fuel feed and return lines with the retaining bolts tightened to 13 ft. lbs. (18 Nm). Temporarily connect the negative battery cable and turn the ignition switch **ON** for 2 seconds, then **OFF** for 10 seconds. Cycle the ignition once again to assure proper system pressure, then disconnect the battery negative cable and inspect the fuel system for leaks.
17. Install the plenum assembly. It may be necessary to disconnect the fuel lines for proper installation; if so be sure to relieve the system pressure before disconnecting any fuel fitting.
18. Tighten the fuel filler cap and connect the negative battery terminal.
19. Properly refill the engine cooling system.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The injectors can be tested by installing a 'noid light', (headlamp bulb may work) into the injector electrical connector, which confirms voltage when the light flashes.

1. Start the engine and listen to each fuel injector individually for a 'clicking' sound.
2. Turn the engine off and disconnect the electrical connector from the injector(s) that did not have a 'clicking' sound.
3. Check the injector for continuity across the terminals. Compare the resistance value to a known good injector. The readings should be similar, if so proceed to the next step. If readings differ greatly, replace the injector.

Fig. 1: Fuel injector testers can be purchased or sometimes rented



Fig. 2: A noid light can be attached to the fuel injector harness in order to test for injector pulse



4. Check between each injector terminal and ground. If continuity exists, replace the injector.
5. Disconnect the fuel injector connector and connect a noid light to the wiring harness connector. Crank the engine, while watching the light. Perform this test on at least two injectors before proceeding. If the light does not flash, check the injector power supply and ground control circuitry. If the light flashes proceed to the next step.
6. If the light flashes, remove the fuel rail from the engine and following the procedure below check the injector operation:
 - A. Using mechanic's wire, secure the injector to the fuel rail.
 - B. Place a clear plastic container around each injector.

CAUTION
Prior to performing this test, all fuel safety precautions must be followed. Make certain the container is approved to handle fuel and is securely positioned around the injector. Do NOT use a glass container. Glass containers can be easily damaged, resulting in a serious fire hazard.

 - C. With the help of an assistant or using a remote starter button, crank the engine for 15 seconds while observing the injector operation. The injector should produce a cone shaped spray pattern and all containers should retain equal amounts of fuel.
 - D. Once the cranking test is complete leave the fuel rail pressurized and observe the injectors for leakage.
7. Replace any injector which is leaking or fails to provide a cone shaped spray pattern when energized.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

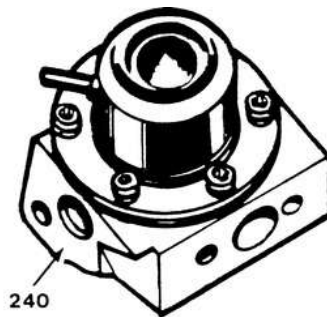
5.7L (VIN 8) Engine

NOTE: The pressure regulator and base are factory adjusted and serviced as a complete assembly only. Do not try to remove the regulator cover.

1985–88 VEHICLES

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. Remove the fuel rail from the vehicle, as outlined earlier in this section.
4. Remove the front crossover tube retaining attaching screw and crossover tube retainer from the right hand rail side.
5. Unfasten the retainer-to-base screw assembly and rear crossover tube retaining from the pressure regulator and base assembly.
6. Separate the left hand fuel rail and plug assembly from the right hand fuel rail and plug assembly.
7. Remove the bracket-to-rail attaching screw, 2 bracket-to-base screws and the regulator and base bracket.
8. Unfasten the screw that attaches the fuel outlet tube to the right hand rail.
9. Remove the base-to-right hand rail assembly.

Fig. 1: Typical fuel pressure regulator assembly — 5.7L (VIN 8) engine



**240 PRESSURE REGULATOR AND
BASE ASSEMBLY**

10. Twist the regulator and base assembly to the remove it from the fuel outlet tube.
11. Unplug the base-to-rail connector.
12. Remove and discard the O-ring seals from the following components, noting the location and sizes of the O-rings to ensure proper placement during installation:
 - Connector
 - Fuel outlet tube
 - Rear crossover tube
 - Front crossover tube
13. Check the O-rings and sealing surfaces for damage that may prevent proper sealing.
14. Installation is the reverse of the removal procedure. Tighten the retaining screws to 44 inch lbs. (5 Nm).
15. Connect the negative battery cable, then turn the ignition to the **ON** position and check for fuel leaks.

1989–91 VEHICLES

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. Remove the fuel rail from the vehicle, as outlined earlier in this section.
4. Remove the rear crossover retainer-to-regulator base attaching screw and retainer.
5. Disconnect the rear crossover tube and O-ring from the regulator base. Discard the O-ring.
6. Unfasten the pressure regulator bracket screws, then remove the bracket.
7. Remove the regulator base-to-rail screw.
8. Remove the pressure regulator and base assembly. Separate the regulator base from the fuel rail, then disconnect from the fuel outlet tube.
9. Remove and discard the fuel outlet tube O-ring.
10. Detach the base-to-rail connector. Remove and discard the O-rings.
11. Installation is the reverse of the removal procedure. Tighten the retaining screws to 44 inch lbs. (5 Nm).
12. Connect the negative battery cable, then turn the ignition to the **ON** position and check for fuel leaks.

5.7L (VIN P and 5) Engines

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. Remove the left fuel rail cover from the vehicle.
4. Disconnect the pressure regulator vacuum line.
5. Remove the fuel outlet tube retainer clip, then disconnect the fuel outlet tube from the pressure regulator.

6. Unfasten the pressure regulator attaching screw, then remove the regulator from the fuel rail.
7. Remove and discard the pressure regulator inlet O-ring and the fuel outlet tube O-ring.
8. Check the filter screen for contamination and replace if dirty.

To install:

9. Lubricate new O-rings with clean engine oil, then install on the pressure regulator and fuel outlet tube.
10. Push the pressure regulator into the fuel rail.
11. Install the pressure regulator attaching screw and tighten to 89 inch lbs.
12. Install the fuel outlet tube into the regulator, then secure with the retaining clip. Tighten the tube retainer screw to 44 inch lbs. (5 Nm).
13. Connect the vacuum line to the regulator.
14. Tighten the fuel filler cap, then connect the negative battery cable.
15. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks.
16. Install the left fuel rail cover.

5.7L (VIN J) Engine

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure.
3. Remove the intake plenum and fuel rail assembly.
4. Remove and discard the O-ring seals from the injector housings.

NOTE: To remove the pressure regulator, you must remove the left hand fuel rail and left hand fuel return tube. The fuel inlet and outlet tube can stay attached to the right hand fuel rail.

5. Remove the crossover tube retaining screw and retainer from the left hand rail.
6. Remove the left hand fuel rail assembly.
7. Remove the left hand fuel return tube retainer attaching screw.
8. Remove the left hand fuel return tube.
9. Remove the fuel inlet tube retainer attaching screw and retainer from the regulator base.
10. Remove the fuel return tube retainer attaching screw (right hand side) and tube retainer.
11. Remove the pressure regulator assembly. Remove and discard the O-rings from the fuel tubes.

To install:

CAUTION

To reduce the chance of fire and/or personal injury, do NOT tighten the crossover tube retainer attaching screws until left hand fuel rail has been installed. Failure to do so could cause damage to the O-ring seals or inlet/outlet tube, causing a fuel leak.

12. Lubricate new O-rings with clean engine oil, then install on the fuel tubes.
13. Install the pressure regulator assembly to the right hand fuel return tube and fuel outlet tube.
14. Install the regulator tube retainer and fuel return tube retainer attaching screw (right side). Finger tighten the attaching screw.
15. Install the fuel inlet tube retainer and attaching screw to the regulator, then finger tighten the screw.
16. Attach the left hand fuel return tube to the regulator base.
17. Install the left hand fuel return tube retainer attaching screw and finger tighten the screw.
18. Install the left hand fuel rail assembly.
19. Install the crossover tube and attaching screw.

NOTE: When tighten the fuel inlet tube retainer screw, hold the pressure regulator and fuel inlet tube retainer in place to avoid side loading the regulator/fuel tube O-rings and inlet/outlet tube assembly.

20. Tighten the fuel inlet tube retainer attaching screws to 44 inch lbs. (5 Nm). Tighten the remaining retainer attaching screw to 44 inch lbs. (5 Nm).
21. Lubricate new injector housing O-ring seals with clean engine oil, then install.
22. Install the fuel rail, then connect the negative battery cable.
23. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks. Disconnect the negative battery cable.
24. Install the intake plenum, tighten the fuel filler cap, then connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

On these vehicles, the fuel pressure regulator is integral with the fuel meter cover. Refer to the fuel injector removal and installation procedure for the fuel meter cover/fuel pressure regulator procedure.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

5.7L (VIN 8) Engine

1985–89 VEHICLES

NOTE: The fuel pump(s) are mounted to the fuel level meter inside the fuel tank.

1. Disconnect the negative battery cable.
2. Relieve the fuel system pressure.
3. Remove the fuel tank filler door and drain tube.
4. Disconnect the feed, return and vapor hoses from the sending unit.
5. Remove the license plate to gain access for removal of the 2 bolts securing the fascia to impact bar.
6. Raise the vehicle and support it safely.
7. Remove the spare tire and carrier from the frame.
8. Disconnect the intermediate exhaust pipe at the converter. Remove the intermediate pipe and mufflers as an assembly from the vehicle.
9. Remove both rear inner fender braces at the frame.
10. Remove both rear inner fender panels.
11. Remove the antenna ground strap and clip.
12. Disconnect the fuel vapor pipe from the left hand fuel tank strap.

Fig. 1: View of the fuel tank mounting — 1985–89 5.7L (VIN 8) engine

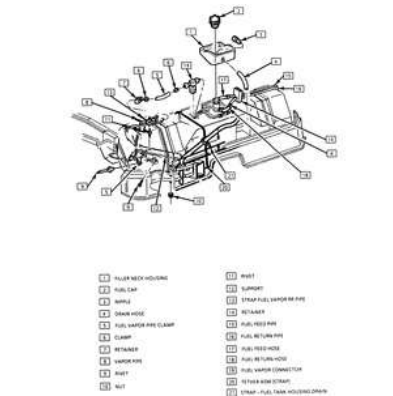
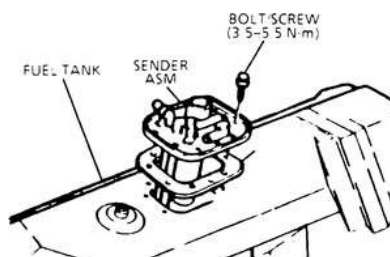


Fig. 2: Fuel sender location — 1985–89 5.7L (VIN 8) engine



13. Disconnect the fuel tank cables from the rear stabilizer shaft brackets.
14. Remove the screws securing the bottom edge of the fascia to the energy absorber pad.
15. Remove all rear lamps.
16. Disconnect each side of the fascia from the horizontal body retainer.
17. Disconnect the right and left vertical retainers securing the fascia to the body.
18. Remove the 6 frame bolts and loosen the 2 front frame bolts.
19. Remove the front frame bolts. Pull the tank and frame assembly to the rear pushing the cover outward and letting the rear of the frame assembly down to clear the cover.
20. Remove the vapor hose from the vapor connector and remove the tank and frame assembly.
21. Remove the fuel sending unit and pump assembly by turning the cam lock ring counterclockwise. Lift the assembly from the fuel tank.
22. Disconnect the fuel pump from the fuel level sending unit.

To install:

23. Reverse the removal procedure, noting the following:
 - A. Always use a new gasket when the sending unit is removed from the vehicle.
 - B. Do not fold or twist the strainer when installing the sending, as this could cause fuel restriction.

- C. Ensure to install insulator pads on the top of the fuel tank to reduce rattle or any noises.
- D. Peel off release paper on rear insulators and apply to the tank or underbody.
- E. Tighten the fuel tank retaining strap bolts to 26 ft. lbs. (35 Nm).
- F. Tighten the rear strap bolts to 8 ft. lbs. (11 Nm).

NOTE: Install the left hand side tank strap first, to prevent the tank flange from grounding out against the tank strap bracket.

- G. Connect the negative battery cable and check for leaks.

1990-91 VEHICLES

NOTE: The fuel pump(s) are mounted on the sending unit, therefore, removal of the gas tank is unnecessary.

1. Disconnect the negative battery cable.
2. Relieve the fuel system pressure.
3. Remove the filler door bezel attaching screws, then the filler door bezel.
4. Remove gas cap, then lift the fuel tank filler neck housing and disconnect the drain hose.
5. Remove filler neck housing, then disconnect the fuel pipes and fuel vapor pipe.
6. Detach the sending unit electrical connector, remove the attaching bolts, then the sending unit assembly from the vehicle.
7. Installation is the reverse of the removal procedure. Connect the negative battery cable.

5.7L (VIN P, 5 and J) Engines

NOTE: Vehicles equipped with the 5.7L (VIN J) engine use a fuel sender assembly which is equipped with 2 fuel pumps. The strainers and pumps are not serviced separately from the sender and, if 1 component is damaged, the sender assembly must be replaced as a unit.

1. Disconnect the negative battery cable.
2. Properly relieve the fuel system pressure and drain the fuel tank.
3. Remove the 4 filler door bezel attaching screws, then remove the filler door bezel.
4. Lift the fuel tank filler neck housing and disconnect the drain hose from the nipple. Remove filler neck housing.
5. Clean the area around all fuel fittings to prevent system contamination, then disconnect and plug the fuel pipes and fuel vapor pipe.
6. Unplug the sending unit electrical connector, remove the attaching bolts and remove the sending unit assembly from the vehicle.
7. If equipped with the VIN J engine, replace fuel sender assembly.
8. If equipped with the VIN P engines, service the sender assembly, as necessary:
 - A. Note the position of the fuel strainer on the pump.
 - B. Support the pump with one hand and grasp the strainer with the other. Turn the strainer in one direction, pull the strainer off the pump and discard it.
 - C. Unplug the fuel pump electrical connection.
 - D. Place the fuel sender assembly upside down on a flat bench.
 - E. Pull the fuel pump downward to remove it from the mounting bracket, then tilt the pump outward and remove it from the pulse dampener.
 - F. Note the position of the dampener on the inlet tube, then remove the dampener from the tube. Shake the dampener and listen for fuel, if fuel is heard inside the dampener, it must be replaced.

Fig. 3: Typical fuel sender assembly replacement

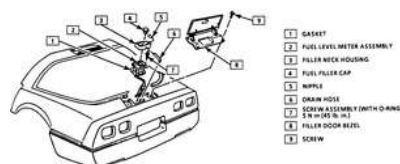


Fig. 4: Fuel sender for a 1994 5.7L (VIN P) engine shown

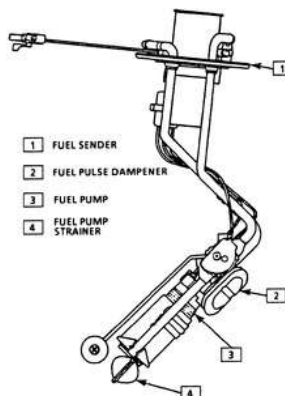
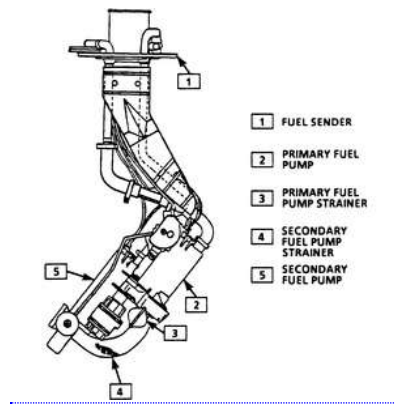


Fig. 5: Fuel sender assembly — 5.7L (VIN J) engine shown



To install:

9. If equipped with the VIN P engines, assemble the sender for installation, as necessary:
 - A. Install the fuel pulse dampener in the same position as noted during disassembly.
 - B. Assemble the rear bumper and insulator onto the fuel pump.
 - C. Position the fuel sender assembly upside down on a flat bench and install the fuel pump between the fuel pulse dampener and mounting bracket.
 - D. Engage the pump electrical connector.
 - E. Install the new fuel strainer into the same position as noted during disassembly. Push on the outer edge of ferrule until fully seated.
10. Position a new gasket on the fuel tank with the notch facing forward in the right corner of the fuel tank.
11. Carefully fold the strainer to allow it to fit through the opening in the tank. Make sure the strainer unfolds in the tank and lower the fuel sender assembly into position.
12. Install the fuel sender assembly attaching screws and tighten alternately and evenly to 45 inch lbs. (5 Nm).
13. Engage the fuel sender assembly electrical connector.
14. Connect all sender assembly fuel and vapor hoses.
15. Connect the fuel drain hose to the nipple on the rubber filler neck housing, then position the housing around the fuel tank filler neck.
16. Install the filler door bezel with the attaching screws.
17. Add fuel, tighten the filler cap and connect the negative battery cable.
18. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks.

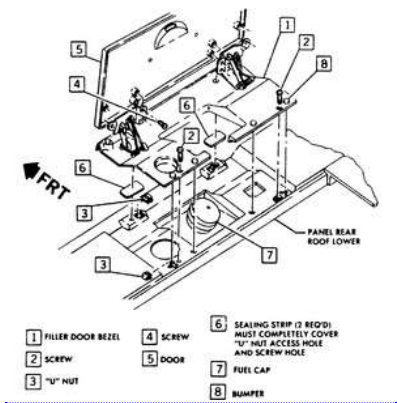
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

The electric fuel pump is located in the fuel tank, attached to the fuel gauge sending unit, and may be serviced separately.

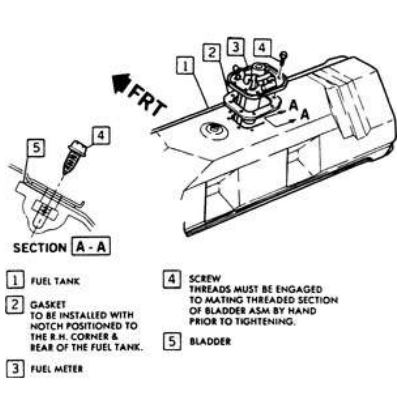
- 1. Disconnect the negative battery cable.
- 2. Remove the fuel filler door.

Fig. 1: Exploded view of the fuel filler door mounting



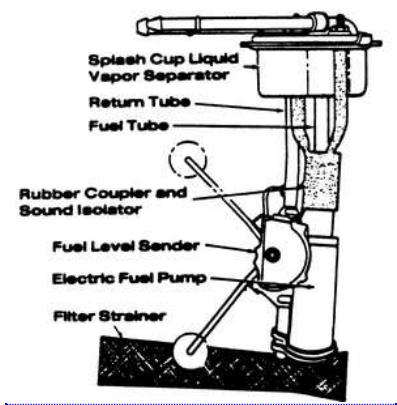
- 3. Remove the fuel cap.
- 4. Remove the fuel tank filler neck housing, then disconnect the drain hose.

Fig. 2: Fuel tank filler neck



- 5. Unfasten the screws attaching the fuel meter/fuel pump to the tank..
- 6. Disconnect the fuel lines, fuel vapor line and electrical connector.
- 7. Remove the fuel meter/fuel pump and gasket.
- 8. Remove the fuel pump.

Fig. 3: View of the fuel meter and pump



- 9. Installation is the reverse of the removal procedure.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Properly relieve fuel system pressure.
2. With ignition **OFF**, install J-34730-1 or an equivalent fuel pressure gauge, to the fuel rail pressure connection.
3. For the VIN J engine, test the primary fuel pump by removing the secondary fuel pump fuse **FP2** or test the secondary fuel pump by removing the primary fuel pump fuse **FP1**.
4. Turn the ignition switch **ON**, but with the engine not running. The fuel pump will operate for 2 seconds and then turn **OFF**. It may be necessary to cycle the ignition a few times to build system pressure. If this is necessary, make sure the ignition remains **OFF** for at least 10 seconds between cycles.
5. With the pump running, fuel pressure should be 41-47 psi, if equipped with the VIN P engine or 48-55 psi, if equipped with the VIN J engine.
6. When the pump stops, the pressure may vary slightly, but then should hold steady with little or no pressure drop.
7. Start the engine and the pressure should drop approximately 3-10 psi.

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

Fig. 1: Fuel system electrical schematic

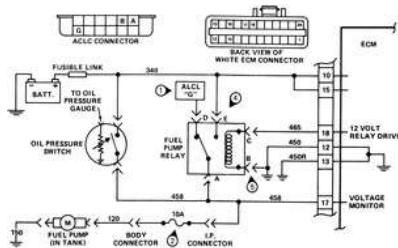
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Fig. 4: Fuel system diagnosis — page 3 of 3

NOTICE: If a filter under pressure, to avoid fuel spillage, refer to field service instructions and testing on engine before disassembly. (Illustration 4 on page 1)

NOTICE: (1) **ENTER UNDER PRESSURE.** TO PREVENT FUEL SPILLAGE, REFER TO FIELD SERVICE PROCEDURES FOR TESTING OR MAKING REPAIRS REQUIRING DISASSEMBLY OF FUEL SYSTEM COMPONENTS.



1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

CAUTION

Observe all applicable safety precautions when working around fuel. Whenever servicing the fuel system, always work in a well ventilated area. Do not allow fuel spray or vapors to come in contact with a spark or open flame. Keep a dry chemical fire extinguisher near the work area. Always keep fuel in a container specifically designed for fuel storage; also, always properly seal fuel containers to avoid the possibility of fire or explosion.

5.7L (VIN 8) Engine

- 1. Disconnect the negative battery cable.
- 2. Properly relieve the fuel system pressure, as outlined earlier in this section.
- 3. Remove the intake plenum, as outlined in Section 3 of this manual.

WARNING

Always use a back-up wrench whenever you remove or install fuel line nuts. This will prevent the fuel lines from twisting, warping and/or weakening.

- 4. Disconnect the fuel feed and return lines, using a back-up wrench to avoid twisting or warping the fuel lines. Remove and discard the fuel line O-rings.
- 5. If equipped, disconnect the cold start line, then remove the cold start valve.
- 6. If equipped, remove the fuel tube bracket bolt.
- 7. Disconnect the vacuum line from the pressure regulator, then unplug the injector electrical connectors.
- 8. Loosen the fuel rail retaining bolts, then raise the rail.
- 9. Remove the intake runners.
- 10. Remove the fuel rail and injectors.
- 11. Remove and discard the O-ring seal from the spray tip of each injector.

Fig. 1: Fuel rail assembly mounting — 5.7L (VIN 8) engine

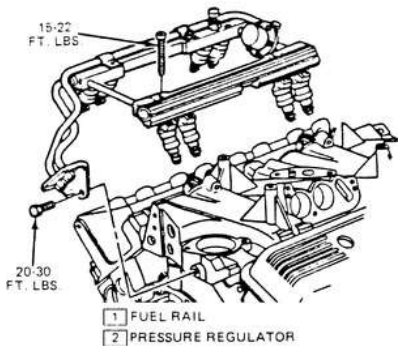
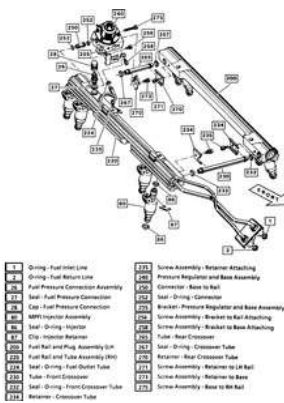


Fig. 2: Exploded view of the fuel rail, injectors and pressure regulator



To install:

- 12. Lightly coat new injector O-rings with clean engine oil, then install on the spray tip of each injector.
- 13. Installation is the reverse of the removal procedure. Tighten the attaching bolts as follows:
 - A. Fuel rail attaching bolts: 15 ft. lbs. (20 Nm).
 - B. Fuel tube bracket bolt: 25 ft. lbs. (34 Nm).
 - C. Fuel line nuts: 20 ft. lbs. (27 Nm), using a back-up wrench.

NOTE: When attaching the injector electrical connectors, rotate the injectors as necessary to avoid stretching the wire harness.

- 14. Connect the negative battery cable, then turn the ignition to the **ON** position and check for fuel leaks.

5.7L (VIN P) Engine

- 1. Disconnect the negative battery cable and properly relieve fuel system pressure.
- 2. Remove the fuel rail cover(s).

3. Disengage the quick-connect fittings at the fuel rail feed and return pipes as follows:
 - A. Grasp both ends of a connection and twist $1/4$ turn in each direction to loosen any dirt. Repeat for other fitting.
 - B. While wearing safety glasses, use compressed air to blow out dirt from the fitting.
 - C. Insert a fuel line separator tool, into the female connector, then push inward to release the male connector and repeat for the other fitting.
4. Disconnect the vacuum line at the pressure regulator.
5. Tag and unplug the injector electrical connectors.
6. Remove the fuel rail attaching bolts and carefully remove the fuel rail assembly along with the injectors, from the top of the intake.

NOTE: The fuel injector lower O-ring uses a nylon collar, called the O-ring backup, which properly positions the O-ring on the injector. Make sure you reinstall the back up, or the sealing O-ring may move on the injector when installing the fuel rail and result in a possible vacuum leak.

7. Remove and discard the injector lower (brown) O-rings from the spray tip end of each injector. Make sure to save the O-ring backups.

Fig. 3: Fuel rail assembly mounting — 5.7L (VIN P and 5) engines

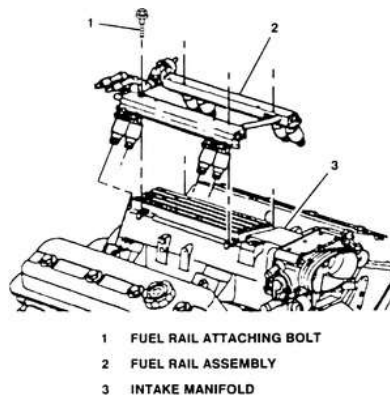
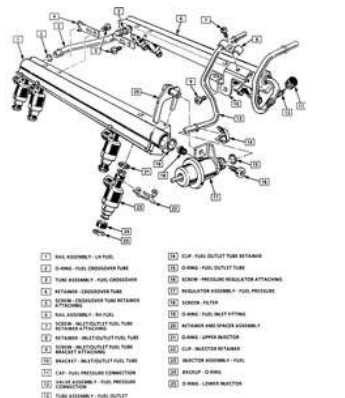


Fig. 4: Exploded view of the fuel rail, injectors, pressure regulator and fuel pressure connection valve — 5.7L (VIN P and 5) engines



To install:

8. Lightly lubricate new lower (brown) injector O-rings, then install on the spray tip of each injector.
9. Install the fuel rail assembly to the intake manifold. Tighten the attaching bolts to 15 ft. lbs. (20 Nm) for 1992-93 vehicles or to 89 inch lbs. (10 Nm) for 1994-96 vehicles.
10. Rotate the fuel injectors as necessary to avoid stretching the wire harnesses and connect the injector electrical connections.
11. Connect the vacuum line to the pressure regulator.
12. Apply a few drops of clean engine oil to the male ends of the fuel line quick-connect fittings. Engage the fittings by pushing the connectors together until the retaining tabs snap into place. Pull gently on both sides of each fitting to be sure the connection is secure.
13. Tighten the fuel filler cap and connect the negative battery cable.
14. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks.

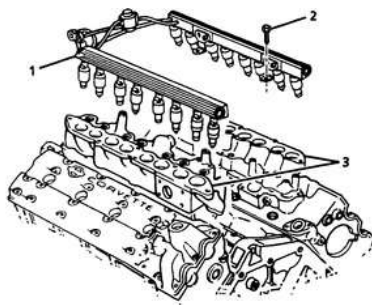
5.7L (VIN J) Engine

1. Disconnect the negative battery cable and properly relieve fuel system pressure.
2. Drain the cooling system into a suitable container.
3. Remove the intake plenum assembly.
4. If not done already when removing the intake plenum, disconnect the fuel feed and return lines from the fuel rail. Remove and discard the old O-rings from the fittings. Disconnect the vacuum line to the pressure regulator.
5. Tag and unplug the fuel injector wire connectors.
6. Remove the bolts securing the fuel rail to the injector housing.
7. Carefully remove the fuel rails making sure not to damage the injector connector terminals or spray tips. Remove the spacers, if equipped. Note the routing of the vacuum hoses around the fuel rail before removing the rail.

NOTE: The fuel injector lower O-ring uses a nylon collar, called the O-ring backup, which properly positions the O-ring on the injector. Make sure you reinstall the back up, or the sealing O-ring may move on the injector when installing the fuel rail and result in a possible vacuum leak.

8. Remove and discard the injector lower (brown) O-rings from the spray tip end of each injector. Make sure to save the O-ring backups.

Fig. 5: Exploded view of the fuel rail mounting — 5.7L (VIN J) engine



- 1 RAIL ASSEMBLY - SFI FUEL
- 2 BOLT - FUEL RAIL ATTACHING
- 3 HOUSING - INJECTOR

To install:

9. Lightly lubricate new lower (brown) injector O-rings, then install on the spray tip of each injector.
10. Install the fuel rail into the injector housing, routing the vacuum lines in their previous positions around the rail.
11. If equipped, be sure the spacers are properly positioned under the rail mounting bracket.
12. Install the fuel rail bolts and tighten to 20 ft. lbs. (26 Nm).
13. Engage the injector electrical connectors, turning the injectors if necessary to avoid stretching the wire harnesses.
14. Install new O-rings to the fuel feed and return pipes.
15. Connect the fuel feed and return lines with the retaining bolts tightened to 13 ft. lbs. (18 Nm). Temporarily connect the negative battery cable and turn the ignition switch **ON** for 2 seconds, then **OFF** for 10 seconds. Cycle the ignition once again to assure proper system pressure, then disconnect the battery negative cable and inspect the fuel system for leaks.
16. Install the plenum assembly. It may be necessary to disconnect the fuel lines for proper installation; if so be sure to relieve the system pressure before disconnecting any fuel fitting.
17. Tighten the fuel filler cap and connect the negative battery terminal.
18. Properly refill the engine cooling system.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

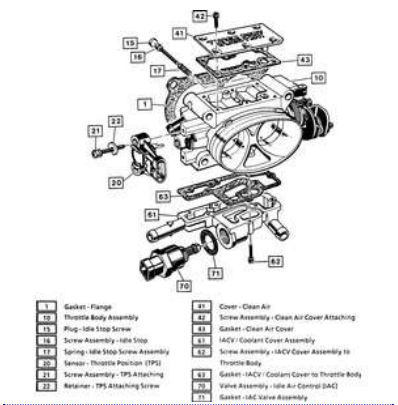
The Tuned Port Injection (TPI), Multi-port Fuel Injection (MFI) and Sequential multi-port Fuel Injection (SFI) systems were used on all 1985–96 vehicles covered by this manual. Even though the systems have different names, they are similar in operation.

The systems are controlled by an Engine Control Module (ECM) which monitors the engine operations and generates output signals to provide the correct air/fuel mixture, ignition timing and idle speed. Input information to the ECM is provided by the oxygen sensor, temperature sensors, detonation sensor, mass air flow sensor and throttle position sensor. A system may use all or some of these sensors, depending on the year and engine application. The ECM also receives information concerning engine rpm, road speed, transmission gear position, power steering and air conditioning status.

All of the systems use multiple injectors, aimed at the intake valve at each intake port. The injectors are mounted on a fuel rail and are activated by a signal from the ECM. The injector is a solenoid-operated valve which remains open depending on the width of the electronic pulses (length of the signal) from the ECM; the longer the open time, the more fuel is injected. In this manner, the air/fuel mixture can be precisely controlled for maximum performance with minimum emissions.

There are two different types of fuel management systems used on the multi-port fuel injection engines. The mass air flow system and the speed density system.

Fig. 1: Exploded view of the throttle body used on the 5.7L (VIN 8) engine



The mass air flow systems measure the mass of air that is drawn into the engine cylinders, rather than just the volume. The sensor contains a hot-wire sensing unit, which is made up of an electronic balanced bridge network. Whenever current is supplied to the sensor, the bridge is energized and the sensing hot-wire is heated. As the air enters the mass air flow sensor, it passes over and cools the hot wire. When the hot wire is cooled, additional current is needed to keep the bridge network balanced. This increase in current is sent to the computer as a voltage signal and is used to calculate the mass of the incoming air. The ECM uses this information to determine the duration of fuel injection pulse, ignition timing and EGR operation.

The speed density systems calculate the volume of air moving through the intake. The ECM establishes the speed factor through a signal from the ignition module. The Manifold or Intake Air Temperature (MAT/IAT) and the Engine Coolant Temperature (ECT) sensors work together to assure that proper temperature information gets to the ECM while the Manifold Absolute Pressure (MAP) sensor monitors the changes in manifold pressure which results from changes in engine loading. These three sensors contribute to the density factor. Together, these inputs (engine speed, coolant temperature sensor, etc...) are the major determinants of the air/fuel mixture delivered by the fuel injection system.

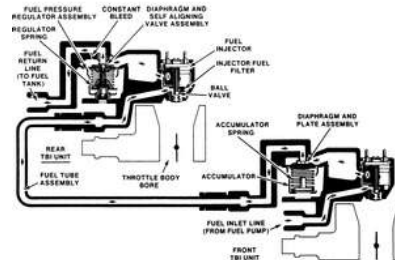
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The 1984 5.7L (VIN 8) engine is equipped with a Model 400 Throttle Body Injection (TBI) system, also referred to as the Cross-fire Injection system. This system consists of a pair of throttle body units which are mounted in front and rear positions on a single manifold. This arrangement lets each TBI unit supply the proper air/fuel mixture through a tuned crossover runner in the intake manifold to the bank of cylinders on the opposite side of the engine. This is the reason for the name "Crossfire injection". Each TBI unit feeds the cylinders on the opposite side. The front TBI gets the fuel from the fuel pump. The fuel then goes through a fuel pressure compensator, through a separate line to the rear TBI, then through the fuel pressure regulator then returns to the fuel tank.

Fig. 1: Cross-fire Fuel Injection fuel meter system schematic



Each TBI unit has its own fuel injector which are controlled individually by the ECM. Each TBI has its own IAC valve, which operate together. A throttle rod connects the throttle valves together. A single Throttle Position Sensor (TPS) is used on the rear TBI unit only. Also, a throttle bore tube is located under the manifold cover, below each throttle valve to help in mixture distribution. The throttle body portion of each TBI unit has several tubes which supply a manifold vacuum signal required for the operation of related engine and emission control systems. A vacuum port, located above the throttle valve is connected to the capped tubes used for on vehicle service air flow balancing, for final throttle valve synchronization. The amount of fuel delivered to the injectors is determined by an electronic signal supplied by the ECM. The TBI unit does not control, but is controlled by, the ECM. The ECM monitors several engine and vehicle conditions needed to calculate the fuel delivery time of the injectors. Delivery time may be modified by the ECM to reflect various operating conditions, such as cranking, cold starting, altitude, acceleration and deceleration. Each TBI unit has its own fuel injector which are controlled individually by the ECM.

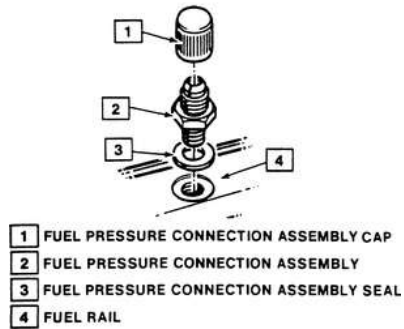
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Clean the area around the fuel pressure connection with a suitable spray cleaner.
2. Disconnect the negative battery cable.
3. Properly relieve the fuel system pressure, as outlined earlier in this section.
4. Remove the fuel pressure connection valve and seal. Discard the seal.

Fig. 1: Exploded view of the fuel pressure connection assembly — 5.7L (VIN 8) engine



To install:

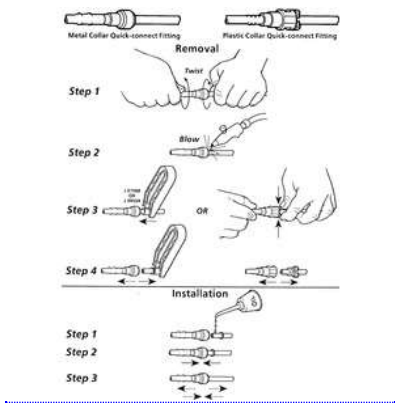
5. Install a new seal on the fuel pressure connection.
6. Position the fuel pressure connection in the fuel rail and tighten securely. For 5.7L (VIN 8) engines, tighten the valve to 88 inch lbs. (10 Nm) for 1985–88 vehicles, or to 115 inch lbs. (13 Nm) for 1989–91 vehicles.
7. Tighten the fuel filler cap.
8. Connect the negative battery cable. With the engine **OFF**, turn the ignition to the **ON** position and check for fuel leaks.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

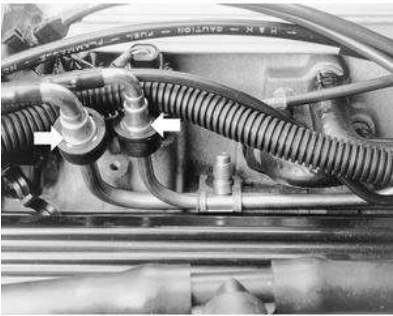
NOTE: This procedure requires tool J37088 or an equivalent fuel line quick-connect separator.

Fig. 1: Quick-connect fuel line fitting removal and installation



1. Grasp both sides of the fitting. Twist the female connector $\frac{1}{4}$ turn in each direction to loosen any dirt within the fittings. Using compressed air, blow out the dirt from the quick-connect fittings at the end of the fittings.

Fig. 2: Before disconnecting any fuel lines, make sure to clean all the dirt from around the fittings (see arrows)



CAUTION

Safety glasses MUST be worn when using compressed air to avoid eye injury due to flying dirt particles!

2. For plastic (hand releasable) fittings, squeeze the plastic retainer release tabs, then pull the connection apart.
3. For metal fittings, choose the correct size tool for the fitting to be disconnected. Insert the proper tool into the female connector, then push inward to release the locking tabs. Pull the connection apart.

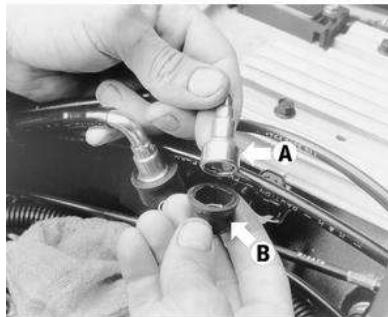
Fig. 3: For metal fittings, insert the tool into the female connector . . .



Fig. 4: . . . then push inward to release the locking tabs and pull the connection apart



Fig. 5: View of the female connector (A) and O-ring seal (B), once the line is disconnected

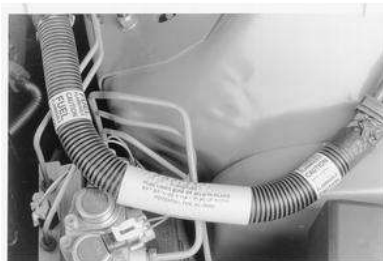


4. If it is necessary to remove rust or burrs from the male tube end of a quick-connect fitting, use emery cloth in a radial motion with the tube end to prevent damage to the O-ring sealing surfaces. Using a clean shop towel, wipe off the male tube ends. Inspect all connectors for dirt and burrs. Clean and/or replace if required.

To install:

5. Apply a few drops of clean engine oil to the male tube end of the fitting.
6. Push the connectors together to cause the retaining tabs/fingers to snap into place.
7. Once installed, pull on both ends of each connection to make sure they are secure.

Fig. 6: Always be sure the fuel lines are routed properly. Improper routing can become a fire hazard



1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable to prevent fuel discharge if the key is accidentally turned to the **RUN** position.
2. Loosen the fuel filler cap to relieve the tank pressure and do not tighten until service has been completed.
3. If equipped, remove the fuel pressure connection valve cap.
4. Connect fuel pressure gauge J-34730-1, or equivalent, to the fuel pressure test valve. Wrap a shop towel around the fitting while connecting the gauge to prevent spillage.
5. Place the end of the bleed hose into a suitable container and open the valve to relieve the fuel system pressure.
6. Drain any remaining fuel into an approved container.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

CAUTION

Observe all applicable safety precautions when working around fuel. Whenever servicing the fuel system, always work in a well ventilated area. Do not allow fuel spray or vapors to come in contact with a spark or open flame. Keep a dry chemical fire extinguisher near the work area. Always keep fuel in a container specifically designed for fuel storage; also, always properly seal fuel containers to avoid the possibility of fire or explosion.

1. Place the transmission in PARK (automatic transmissions) or NEUTRAL (manual transmission), then set the parking brake and block the drive wheels.
2. Loosen the fuel filler cap to relieve tank pressure.
3. Remove the FUEL PUMP fuse from the fuse block in the passenger compartment.
4. Start the engine and allow to run until it stops due to lack of fuel.
5. Engage the starter (turn key to start) for three seconds to dissipate all pressure in the fuel lines.
6. Turn the ignition **OFF**, then re-engage the connector at the fuel tank or install the fuel pump fuse.
7. Disconnect the negative battery cable to prevent accidental fuel spillage should the ignition key accidentally be turned **ON** with a fuel fitting disconnected.
8. When fuel service is finished, tighten the fuel filler cap and connect the negative battery cable.

CAUTION

To reduce the chance of personal injury when disconnecting a fuel line, always cover the fuel line with cloth to collect escaping fuel, then place the cloth in an approved container for disposal.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

NOTE: Ensure an approved dry chemical (Class B) fire extinguisher is near the work area. For safety, additional vehicle supports should be added to the end of the vehicle opposite the work area to keep the vehicle stable on the lift.

1. Disconnect the negative battery cable and properly relieve fuel system pressure.
2. Drain the fuel tank into an approved container using a hand-operated fuel pump.
3. Remove the 4 screws attaching the fuel door bezel, then remove the bezel and the filler cap.
4. Lift the filler neck housing and disconnect the drain hose from the nipple.
5. Reinstall the filler cap to prevent dirt from entering and remove the filler neck housing.
6. Unplug the fuel sender electrical connector at the tank.
7. Thoroughly clean the surrounding areas to prevent fuel system contamination, then disconnect the fuel hoses from the sender assembly.
8. Remove the license plate and all rear lamps to provide access, then remove the carriage bolts securing the fascia to the impact bar.
9. Raise and support the vehicle safely.
10. Remove the spare tire and tire carrier from the frame.
11. With the aid of an assistant, remove the mufflers as an assembly from the converter.
12. Remove the canister splash shield, if equipped, and both rear inner fender braces at the frame.
13. Remove both rear wheel house liner panels.
14. Remove the antenna ground strap and clip at the antenna base and frame.
15. Disconnect the fuel vapor pipes from the canister or the bottom of the tank, then remove the canister.
16. Remove both fuel tank cables from the stabilizer shaft supports.
17. Remove the 2 bottom fascia-to-energy absorbing pad attaching screws.
18. Remove the marker lamps and spare tire light.
19. Remove the 4 nuts attaching each side of the fascia to the horizontal body retainer. Then remove the 5 nuts securing each side of the outer body retainer to the fascia.
20. Remove 6 side impact bar bolts and loosen the front 2 bolts, 1 on each side. With the aid of an assistant, support the impact bar, and remove the front bar bolts. Remove the impact bar and fuel tank assembly, then separate the fuel tank.
21. If the tank is being replaced, transfer the cables, vapor connections and hoses, fuel sender assembly, and/or fuel connector, as required and applicable.

Fig. 1: Typical fuel tank replacement

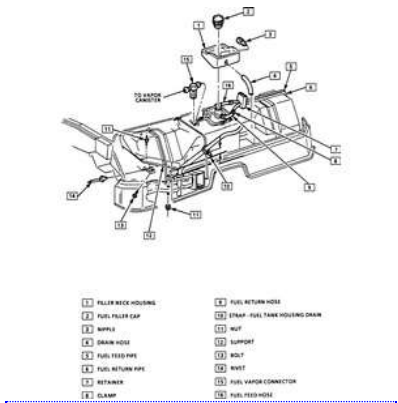


Fig. 2: View of the fuel tank insulator used on convertibles

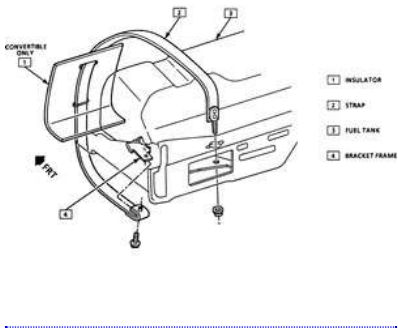
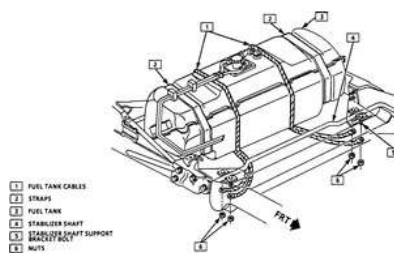


Fig. 3: Fuel tank cable routing



To install:

22. Install the fuel tank to the impact bar assembly and tighten the strap bolts to 11 ft. lbs. (15 Nm) and the strap nuts to 40 inch lbs. (4.5 Nm). Install the impact bar assembly to the vehicle and tighten the 8 bolts to 37 ft. lbs. (50 Nm).
23. Install rear and side fascia to the body retainer using the attaching nuts. Tighten the nuts to 53 inch lbs. (6 Nm).
24. Install the marker lights and the spare tire light sockets.
25. Attach screws to the edge of the fascia and impact bar.
26. Attach the fuel tank cables to the stabilizer shaft supports. Tighten the cable attaching nuts to 18 ft. lbs. (25 Nm).
27. Install the 2 carriage bolts securing the fascia to the impact bar, then install the antenna ground strap and clip.
28. Install both inner fender panels, then the braces to the frame.
29. Connect the vapor hoses to the canister or the bottom of the tank, then install the canister and, if equipped, the canister splash shield.
30. With the aid of an assistant, install the muffler assembly to the rear of the converter.
31. Install the spare tire and carrier to the frame.
32. Lower the vehicle and install all rear lamps.
33. Install the license plate.
34. Connect all lines and electrical connections to the fuel sender assembly.
35. Refill the fuel tank, tighten the fuel filler cap and connect the negative battery cable.
36. Turn the ignition **ON** for 2 seconds, **OFF** for 10 seconds, then **ON** again and inspect the system for leaks.
37. Install the drain hose, seal and fuel filler door bezel.

1990 Chevrolet CORVETTE

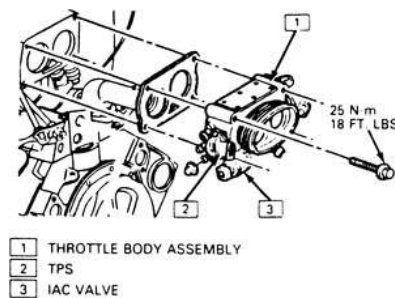
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

5.7L (VIN 8, P & 5) Engines

1. Disconnect the negative battery cable.
2. Partially drain the coolant, into a suitable container, in order to allow the throttle body hoses to be disconnected.
3. Disconnect the MAF sensor electrical connector, then remove the air inlet duct.
4. If necessary, disconnect the crankcase ventilation hose and EVAP canister purge solenoid valve vacuum hose from the throttle body.
5. Tag and detach the IAC valve and TPS electrical connectors.
6. Label and disconnect the vacuum lines from the throttle body.
7. Disconnect the coolant hoses from the throttle body.
8. Disconnect the throttle, TV and cruise control cables.
9. Unfasten the retaining bolts, then remove the throttle body assembly and flange gasket assembly. Discard the gasket and replace with new one during installation.
10. Thoroughly clean the gasket mating surfaces.

Fig. 1: Exploded view of the throttle body mounting — 1985–91 5.7L (VIN 8) engines shown, VIN P & 5 similar



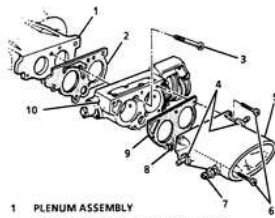
To install:

11. Position a new flange gasket, then install the throttle body. Tighten the throttle body mounting bolts to 18 ft. lbs. (25 Nm).
12. Connect the throttle, TV and cruise control cables. Make sure that the cables do not hold the throttle open.
13. Attach the coolant hoses and vacuum lines to the throttle body.
14. Attach the IAC valve and TPS electrical connectors.
15. Install the air inlet duct.
16. Fill the cooling system with the proper type and amount of coolant.
17. Connect the negative battery cable. With the engine **OFF**, Depress and release the accelerator pedal to make sure the operates freely and does not stick.

5.7L (VIN J) Engine

1. Disconnect the negative battery cable.
2. Partially drain the coolant, into a suitable container. Coolant circulates through the throttle body and must be partially drained before removing the throttle body.
3. Remove the air intake duct.
4. Unplug the electrical connector from the IAT sensor.
5. Unfasten the throttle cable cover retainers, then remove the cover.
6. Remove/loosen the throttle body extension retaining screws. The inside screws will not come out completely, but will disengage from the throttle body.
7. Grasp the throttle body extension, then disconnect the left and right fresh air hoses and canister vacuum signal hose.
8. Remove the throttle body extension and gasket, then discard the gasket.
9. Disconnect the throttle body cable from the throttle body.
10. Remove the throttle body cable hold-down clamp.
11. Detach the electrical connectors from the IAC valve and TP sensor.
12. Unfasten the throttle body-to-plenum bolts, then remove the throttle body and gasket. Discard the gasket.
13. Thoroughly clean the gasket mating surfaces, but be careful not to scratch or gouge the sealing surfaces.

Fig. 2: View of the throttle body mounting — 5.7L (VIN J) engine



- 1 PLENUM ASSEMBLY
- 2 GASKET - PLENUM TO THROTTLE BODY
- 3 BOLT - THROTTLE BODY
- 4 FITTING - VENTILATION BREATHER HOSE
- 5 EXTENSION - THROTTLE BODY
- 6 SCREW - THROTTLE BODY EXTENSION
- 7 SENSOR - INTAKE AIR TEMPERATURE (IAT)
- 8 RETAINER - THROTTLE BODY EXTENSION SCREW (INSIDE SCREWS ONLY)
- 9 GASKET - THROTTLE BODY TO THROTTLE BODY EXTENSION
- 10 BODY ASSEMBLY - THROTTLE

14. Installation is the reverse of the removal procedure. Tighten the throttle body mounting bolts to 11 ft. lbs. (15 Nm).
15. After installation is complete, connect the negative battery cable. With the engine **OFF**, Depress and release the accelerator pedal to make sure the operates freely and does not stick.
16. Reset the IAC valve pintle position as follows:
 - A. Slightly depress the accelerator pedal.
 - B. Start and run the engine for 5 seconds.
 - C. Turn the engine **OFF** for 5 seconds.
 - D. Restart the engine, then check for proper idle operation.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Remove the air cleaner assembly.
3. Detach the electrical connectors from the injector, Idle Air Control (IAC) valve and Throttle Position Sensor (TPS). Remove the wiring harness from the throttle body.
4. Tag and disconnect the related vacuum lines from the TBI assembly.
5. Remove the throttle cable, and also the transmission detent and cruise control cables as applicable.

CAUTION

When the fuel line is disconnected, a small quantity of fuel may be released. To lower the risk of personal injury, make sure to cover the fuel line fitting with the a rag to absorb the fuel, then place the rag in a suitable container.

6. Using a back-up wrench to prevent the fuel nuts from turning on the TBI units, disconnect the fuel inlet and return lines, then remove the fuel tube between the 2 TBI units.
7. If removing the TBI unit for replacement, perform the following:
 - A. Remove the bolts and nuts from the inlet manifold cover, then remove the TBI unit assembly.
 - B. Place a protective covering over the "swirl" plates located below each throttle plate.
8. If removing the TBI unit for disassembly, perform the following:
 - A. Remove and discard the throttle rod retaining clip from the front TBI throttle lever stud. A new clip, which is supplied in the service kit, must be used when reassembling the separated front and rear throttle bodies. One throttle rod end bearing is permanently attached to the throttle lever stud of the rear unit, and must not be removed from it. If the throttle rod and bearing assembly needs replacement, the entire rear throttle body must be replaced.
 - B. Remove the TBI-to-cover mounting bolts from the front unit. Then, remove the TBI-to-cover mounting bolts from the rear unit.
 - C. Lift the rear TBI unit off the manifold cover locator pins, and raise it above the front unit. Slide the throttle rod end bearing off the front unit throttle lever stud.
 - D. Remove the front TBI unit and mounting gasket.

Fig. 1: Exploded view of the front and rear TBI unit components — 1 of 2

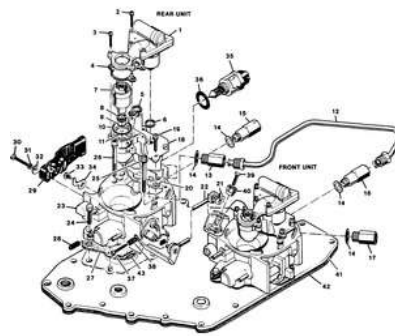


Fig. 2: Front and rear TBI unit component key list — 2 of 2

ALL PARTS ARE COMMON BETWEEN FRONT AND REAR TBI UNITS EXCEPT THOSE MARKED F (FRONT) OR R (REAR). REAR UNIT EXPLODED VIEW IS TYPICAL ILLUSTRATION.	
FUEL METERING PARTS	THROTTLE BODY PARTS
1 FUEL METER COVER & PRESSURE REGULATOR-R	23 THROTTLE BODY ASSEMBLY
2 SCREW & WASHER ASM.-LONG (3)	24 BOLT-TBI ATTACHING-SHORT
3 SCREW & WASHER ASM.-SHORT (2)	25 STUD/BOLT-TBI/AIR CLEANER ATTACHING
4 GASKET-FUEL METER COVER	26 STUD-TBI & AIR CLEANER ATTACHING
5 GASKET-FUEL METER OUTLET	27 GASKET-TBI MOUNTING
6 DUST SEAL-PRESSURE REGULATOR-R	28 CAP TUBE
7 FUEL INJECTOR	29 THROTTLE POSITION SENSOR (TPS) R
8 FILTER-FUEL INJECTOR	30 SCREW-TPS ATTACHING (2)-R
9 SEAL SMALL "O" RING	31 WASHER-TPS SCREW (2)-R
10 SEAL-LARGE "O" RING	32 RETAINER-TPS (2)-R
11 BACK-UP WASHER-F-FUEL INJECTOR	33 SCREW-TPS LEVER ATTACHING-R
12 FUEL TUBE ASSEMBLY	34 LEVER-TPS-R
13 NUT-FUEL INLET-R	35 IDLE AIR CONTROL (IAC) ASSEMBLY
14 GASKET-FUEL NUT (2)	36 GASKET-IAC ASSEMBLY
15 NUT-FUEL RETURN-R	37 SCREW-THROTTLE STOP
16 NUT-FUEL RETURN-F	38 SPRING-THROTTLE STOP SCREW
17 NUT-FUEL INLET-F	39 SCREW-THROTTLE SYNCHRONIZING-F
18 FUEL METER BODY ASM.-ATTACHING (3)	40 COLLAR-THROTTLE SYNCHRONIZING SCREW-F
19 SCREW & WASHER ASM.-ATTACHING (3)	41 INLET MANIFOLD PARTS
20 GASKET-FUEL METER BODY	42 GASKET INLET MANIFOLD COVER
21 CLIP-THROTTLE ROD RETAINING-F	43 THROTTLE BORE TUBE (OR SWIRL PLATE)-MANIFOLD COVER
22 THROTTLE ROD & BEARING ASSEMBLY-R	

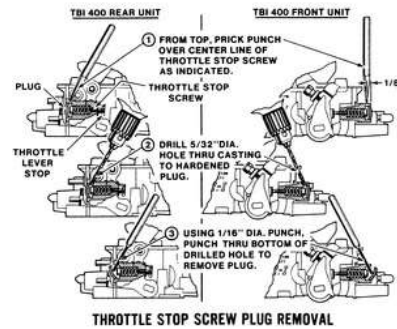
To install:

9. If the TBI unit was removed for replacement, installation is the reverse of the removal procedure. Tighten the retaining bolts and nuts to 10–14 ft. lbs. (14–19 Nm).

NOTE: If the TBI unit was removed for disassembly, perform the following steps, as applicable.
10. Reinstalling the units with the original front and rear throttle bodies on the original manifold cover:
 - A. Install new front and rear throttle body mounting gaskets.
 - B. Install the front TBI unit on the manifold cover locator pins. Tighten the mounting bolts to 8–14 ft. lbs. (11–19 Nm).
 - C. Holding the rear unit above the front unit, install the throttle rod end bearing on the front unit throttle lever stud. Install the rear TBI unit onto the manifold cover locator pins. Tighten the mounting bolts to 8–14 ft. lbs. (11–19 Nm).
 - D. Use needle-nose pliers to carefully install a new throttle rod and bearing retaining clip.
 - E. Proceed to the Final Assembly steps.
11. If you replaced the manifold cover, TBI unit(s) or throttle bodies, perform the following. This section must be followed because replacement of one or more of the assemblies requires throttle valve synchronizing and checking the throttle rod alignment.
 - A. If the tamper resistant plugs covering the throttle stop screws are in place, remove the plugs. Replacement throttle bodies do not have throttle stop screw plugs

installed. Use a punch to bet the located, over the center line of the throttle stop screw, for a hole to be drilled. Drill a $\frac{5}{32}$ in. (4mm) diameter hole plug through the throttle body casting, to the hardened plug. Use a $\frac{1}{16}$ in. (2mm) diameter punch to drive through the bottom of the drilled hole and knock out the plug.

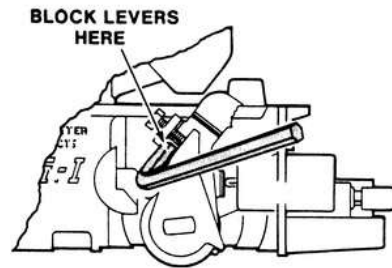
Fig. 3: Steps for removing the throttle stop screw plug



- B. If the front TBI unit throttle synchronizing screw has a welded retaining collar, grind off the weld. A replacement throttle body may have a throttle synchronizing screw with a non-welded collar.
- C. Block possible movement of the throttle lever, as shown in the accompanying figure, relieving the force of the heavy spring against the throttle synchronizing screw, to prevent the levers from coming into contact.

NOTE: If a lever is not blocked before the throttle synchronizing screw, the screw may be damaged, and reinstallation will be difficult.

Fig. 4: Removal of the throttle synchronizing screw collar



- D. Remove the synchronizing screw and collar, discard the collar and reinstall the screw. Remove the blocking from the throttle lever.
- 12. Install the necessary throttle body mounting gaskets.
- 13. With either throttle body in place, install the throttle rod end bearing on the front unit throttle lever stud.
- 14. Install the other throttle body on the manifold cover locator pins. Tighten the mounting bolts to 8–14 ft. lbs. (11–19 Nm).
- 15. Perform the throttle valve synchronizing or throttle rod alignment check, as necessary.

NOTE: The following steps are the "Final Assembly" steps.

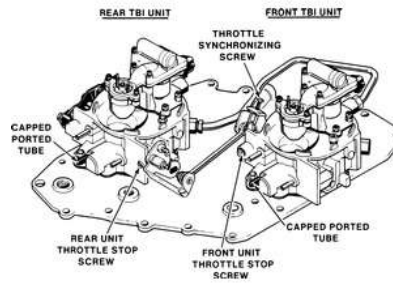
- 16. Reinstall the connecting fuel tube between the front and rear TBI units. Tighten to 24 ft. lbs. (32 Nm), using a back-up wrench.
- 17. Attach the fuel inlet and return lines, using a back-up wrench on the fuel nuts.
- 18. Connect the throttle cable, and the transmission detent and cruise control cables, if applicable.
- 19. Attach the vacuum lines, as tagged during removal.
- 20. Attach the electrical connectors to the injectors, IAC and TPS. Reinstall the wiring harness on the throttle body.
- 21. Install the air cleaner assembly.
- 22. With the engine **OFF**, depress the accelerator pedal to the floor and release, checking for free return of the pedal.

Throttle Valve Synchronizing — Preliminary Adjustment

The model 400 TBI preliminary throttle valve synchronizing adjustment may be performed with the assembly on the vehicle, or removed from the vehicle, as a bench procedure.

- 1. Turn both front unit and rear unit throttle stop screws counterclockwise enough to break contact with the related throttle lever tangs.
- 2. Adjust the throttle synchronizing screw to allow BOTH throttle valves to close. The throttle rod end bearing will move freely on FRONT unit throttle lever stud when both valves are closed.

Fig. 5: Location of the throttle stop screws and synchronizing screw

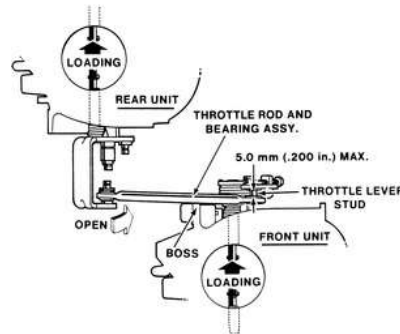


3. Turn the FRONT throttle stop screw clockwise slowly until it makes contact with the throttle lever tang. Turn clockwise $\frac{1}{4}$ additional turn.
4. Turn the REAR throttle stop screw clockwise slowly until it makes contact with the throttle lever tang. Turn clockwise an additional $\frac{1}{2}$ turn.
5. Final adjustments are made with the assembly on the vehicle and the vehicle running.

Throttle Rod Alignment Check.

1. Actuator the rear unit throttle lever to bring both units to the wide open throttle position by loading the throttle valve as shown. Move the throttle rod toward the front unit casting boss.
2. Check the clearance between the shoulder of the stud and the side of the ball surface. Maximum clearance must not exceed 0.20 in. (5.0mm). If the clearance is greater, the replacement assembly (manifold cover, TBI unit, or throttle body) must be exchanged, and the preliminary throttle valve synchronizing adjustment repeated.

Fig. 6: Maximum shoulder-to-ball clearance check



3. Use needle-nose pliers to install carefully a NEW throttle rod and bearing assembly retaining clip supplied in the replacement kit.
4. Move both the front and rear throttle levers through the total throttle travel, locating the throttle valves.
5. Check the clearance between the throttle rod and front throttle body casting boss. If the minimum clearance is less than 0.040 in. (1.02mm), replacement assembly must be exchanged. If the minimum clearance is at least 0.040 in. (1.02mm) go to the final assembly.
6. If assemblies were replaced, repeat the throttle valve synchronization and throttle valve alignment check.

Fig. 7: Minimum throttle rod-to-casting clearance check

