



**Installation Manual v1.0:
Twin CP3 Fuel Injection Kit
2010-2011 Dodge 6.7L**



Figure 1 - Full Kit Photo



Figure 2 - Hardware Kit

Please read all instructions before installation.

This kit is not emissions legal in California. Kit is legal only on race vehicles that will not be used on public highways.

Note: DO NOT remove any high pressure fittings from the pump. Doing so can result in damage to the internal components.

CAUTION: Cleanliness cannot be overemphasized when handling or replacing diesel fuel system components. This especially includes the fuel injectors, high-pressure fuel lines and fuel injection pump. Very tight tolerances are used with these parts. Dirt contamination could cause rapid part wear and possible plugging of fuel injector nozzle tip holes. This in turn could lead to possible engine misfire. Always wash/clean any fuel system component thoroughly before disassembly and then air dry. Cap or cover any open part after disassembly. Before assembly, examine each part for dirt, grease or other contaminants and clean if necessary. When installing new parts, lubricate them with clean engine oil or clean diesel fuel only.

1. Before starting the installation, please check to make sure all of the parts pictured above are inside the Dodge Twin CP3 kit. A complete corresponding list of components can be found on pages 13 and 14.
2. Disconnect the (-) negative battery terminals.
3. Drain the coolant from the radiator and remove the upper radiator hose.
4. Remove the engine oil dipstick and set aside (plug/cap off the dipstick tube so nothing can fall in during installation).
5. Remove the plastic engine cover by removing the 4 bolts shown. Set it aside.

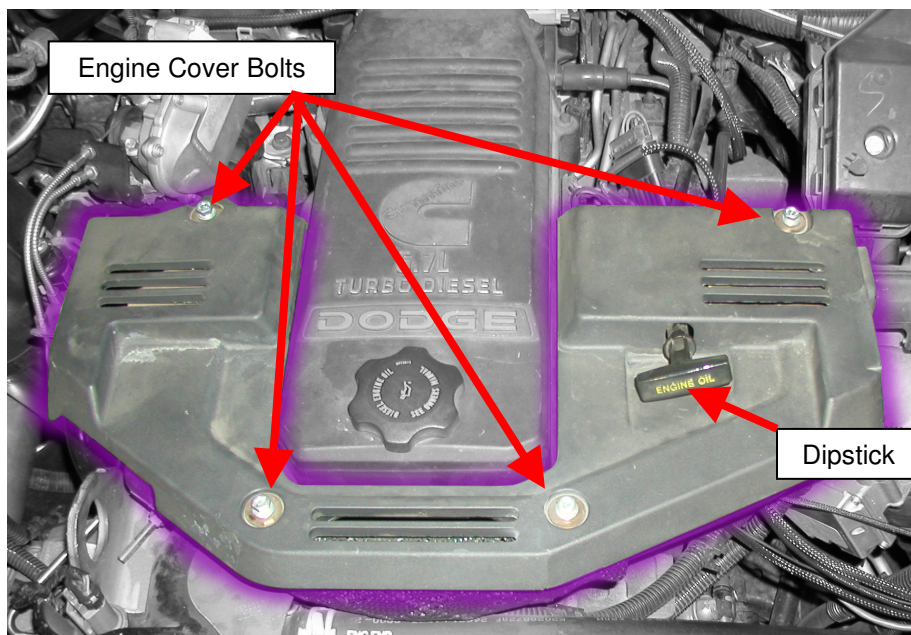


Figure 3 - Engine Cover and Dipstick

6. Remove the factory serpentine belt and discard it.

Note: Once the serpentine belt is loose, it is helpful to loosen the tensioner bolt to remove the belt.

7. Thoroughly clean the area around the intake manifold and the front of the fuel rail. Place shop towels around any fuel fitting that will be removed to absorb any fuel leakage.
8. Remove the engine oil dipstick tube mounting bolts located on the intake manifold. This will allow the dipstick tube to move and provide better access to fuel lines, however, take care not to bend the dipstick tube.
9. Remove the banjo bolt and washers from the return line located at the front of the fuel rail and set them aside.
10. Loosen the high pressure supply line nut on the back of the factory pump. Remove the high pressure supply line from the rail and rotate it out of the way.
11. Label and remove all the high pressure lines from the rail and the fuel injector ports in the head. Set them aside.

NOTE: The injector lines can be difficult to remove. A $\frac{3}{4}$ " or 19mm crowfoot wrench is helpful.

12. Remove the electrical connector from the fuel pressure sensor located on the back of the fuel rail.

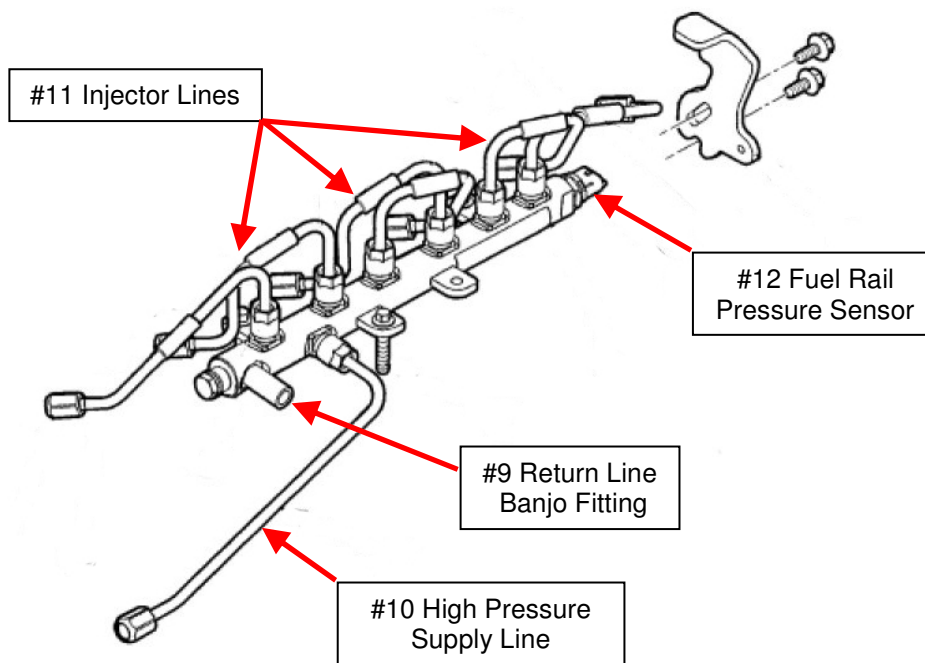


Figure 4 - Fuel Rail Assembly

13. Remove the three 10mm bolts and 10mm stud holding the fuel rail in place. Carefully slide the fuel rail out of the engine compartment.
14. Clamp the fuel rail in a vise using the mount flanges used to bolt the rail to the engine. Carefully remove the fuel pressure sensor.
15. Locate the high pressure fitting (#24, Figure 1), lubricate the threads with clean diesel fuel and thread it into the fuel rail. To prevent leaks, torque the fitting to **52 ft-lbs**.
16. Install the factory pressure sensor into the high pressure junction (#11, Figure 1) and torque the sensor to **52 ft-lbs**. Be sure to apply a small amount of grease or clean engine oil to the sealing surface of the sensor before installing.
17. Reinstall the fuel rail using the factory hardware. Apply thread locking compound to the threads and torque them to **18 ft-lbs**.
18. Install the number 6 cylinder high pressure line hand tight first, and then torque each nut to **30 ft-lbs**. Repeat for the remaining high pressure lines. Again, cleanliness cannot be overemphasized at this stage.
19. Reinstall the factory fuel rail supply and return lines.
20. Loosely install the high pressure junction on the high pressure junction bracket (#12, Figure 1) using the 6mm hardware provided.
21. Two threaded holes are located on the driver's side of the head. This is where the junction block bracket will mount. Using the M8-1.25 x 16mm bolts included in the kit, loosely install the bracket and junction block to the side of the head behind in intake elbow.

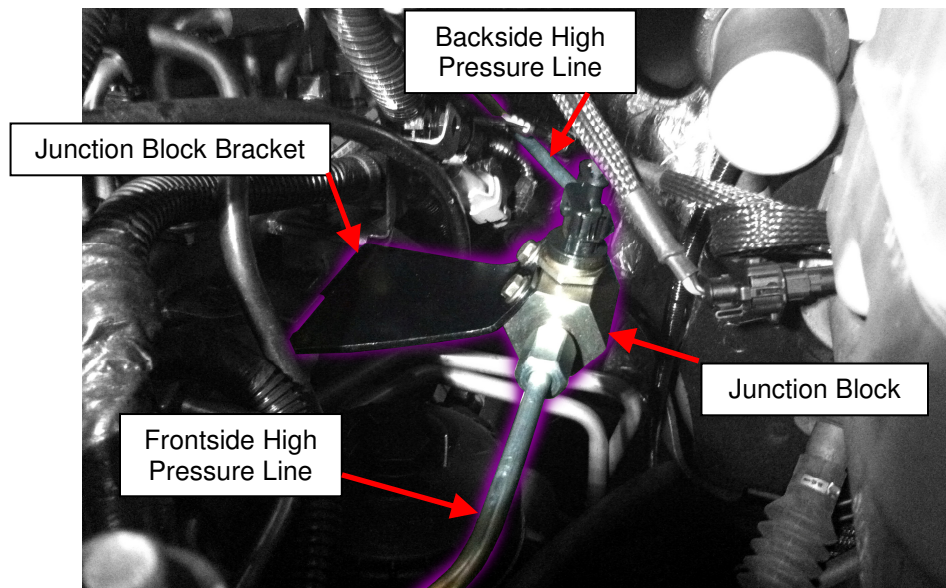


Figure 5 - High Pressure Line Routing

22. Install the backside high pressure line between the new fitting in the fuel rail and the junction block. Adjust the position of the high pressure junction as necessary.
23. The factory rail pressure sensor harness is not long enough to reach the new location of the fuel pressure sensor. Using the extension harness (#28, Figure 1) connect the extension harness into the factory harness. Plug the opposing connector from the extension harness into the sensor in the high pressure junction.

NOTE: Be sure to orient the rail pressure sensor connectors as show below.



There is a ramp and clip that must be connected properly. The block on the opposite side will then slide into the slot of the opposing connector. If reversed, the truck will not idle properly and the engine will likely shut off.

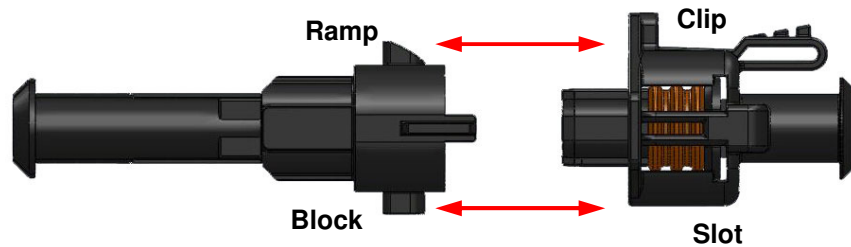


Figure 6 - Rail Pressure Sensor Connector Orientation

24. Using the supplied 3/8" bolts and hardware, loosely install the new pump support and pulley bracket to the timing cover below the intake elbow. Leaving this piece loose will allow adjustment when installing the pump bracket.

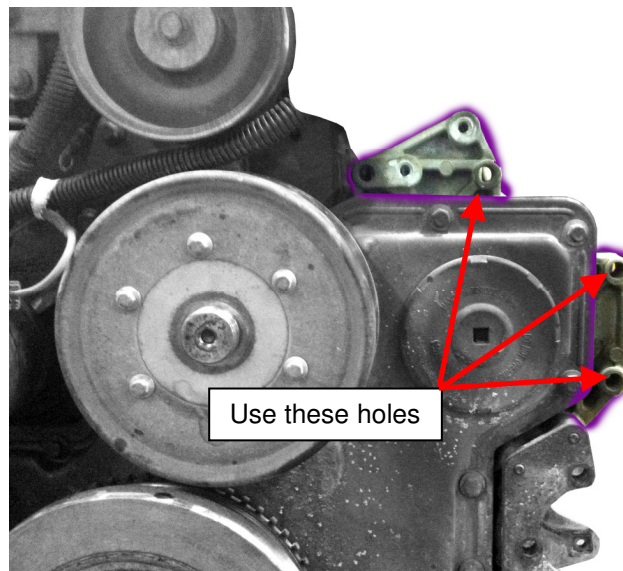


Figure 7 - Pump Support Bracket Mounting Holes

25. Using the supplied 8mm hardware, install the new CP3 pump and radiator hose support bracket in the CP3 bracket with the fittings oriented as shown below. A 5mm allen wrench will be necessary for the socket head cap screws.

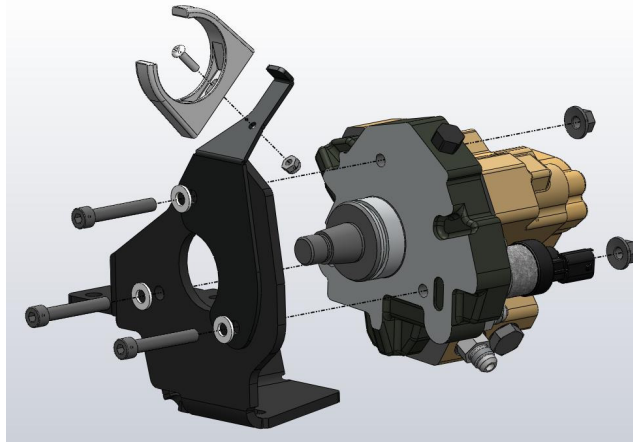


Figure 8 - Pump Bracket Assembly

26. Remove the mount holding the wiring loom to the front of the head. Install the CP3 bracket/pump on the head with the three supplied M10 x 1.5 bolts and 10mm flat washers as shown. Use a small amount of thread locking compound on the three 10mm bolts. Torque each of the bolts to **35 ft-lbs**.

Note: Prior to installing the pump and bracket, it can be useful to start installing the new fittings and lines in the factory fuel pump. Please refer to step 30 to determine the correct installation procedure for your application.

27. Install the 8mm bolt and flange nut through the slotted hole in the bottom of the pump bracket and the top of the pump support bracket. Tighten all pump support bracket hardware. The finished product should appear similar to the figure below.

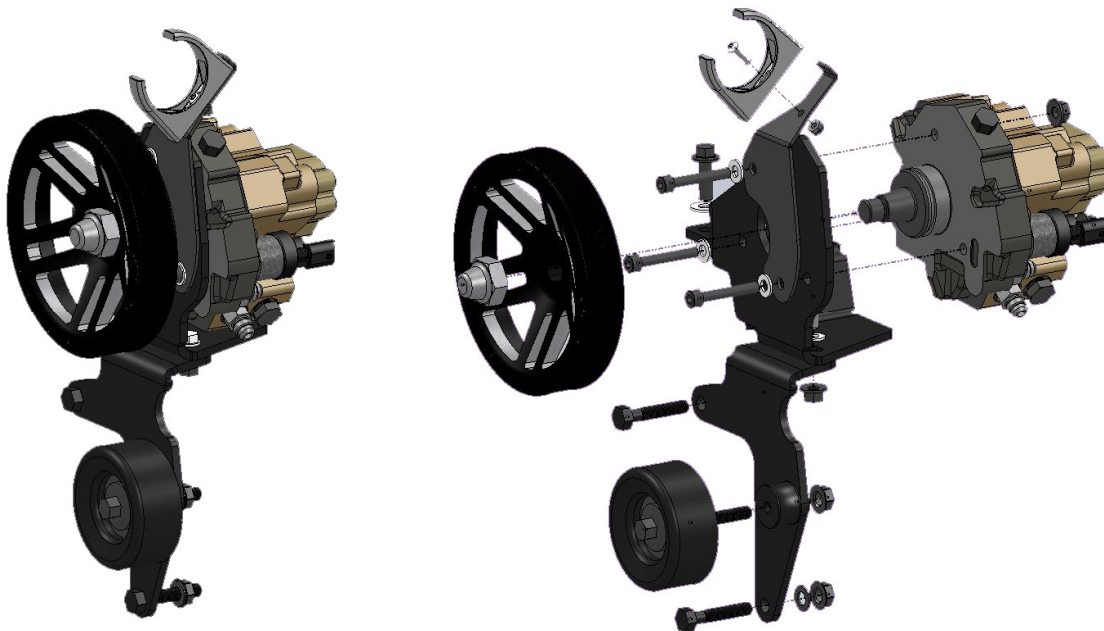


Figure 9 - Pump Mounting Assembly

28. Install front-side high pressure line between the high pressure fitting on new injection pump and the high pressure junction. Torque fittings to **30 ft-lbs**.
29. Install the new idler pulley (#6, Figure 1) in the threaded standoff on the pump support bracket. Apply a small amount of thread locking compound on the pulley threads and torque the bolt to **35 ft-lbs**.
30. There are two common ways to supply fuel to the new pump:
 - a. Use the factory lift pump and share the supply between the two injection pumps (adequate, but limits performance gains).
 - b. Supply the injection pumps with an aftermarket lift pump and filter (performance applications).

Supplies are included with the ATS Dodge Twin CP3 Kit to help connect the fuel lines for both options. Some aftermarket lift pump kits use different sized lines and fittings. The fittings included in the kit will help but may work with all aftermarket lift pump kits.

Option A – Factory Lift Pump:

Note: Pictures of this installation are shown at the end of this section.

A1. If the factory lift pump will supply both pumps, the factory plastic supply and return lines will be utilized.

A2. Using approximately 7 inches 3/8 fuel line (#16, Figure 1), the 90° barbed to JIC-6 fitting (#21, Figure 1) and the barbed banjo fitting (#18, Figure 1) assemble the new supply line as shown below. To install the fittings, simply push them into the fuel line. These types of fittings do not require hose clamps. This line will be used to transfer fuel from the factory pump up to the new pump.



Figure 10 - Supply Line Assembly

A3. Disconnect the factory supply line from the fuel pump and rotate it out of the way.

A4. Remove the factory quick-disconnect supply fitting from the factory injection pump. Replace that fitting with a 12mm banjo to 5/16 quick-disconnect fitting (#26, Figure 1), 2 copper sealing washers and the new supply line as shown. Orient the barbed fitting such that it points toward the front of the vehicle. Connect the 90° fitting to the fitting already in the new pump as shown at the end of this section.

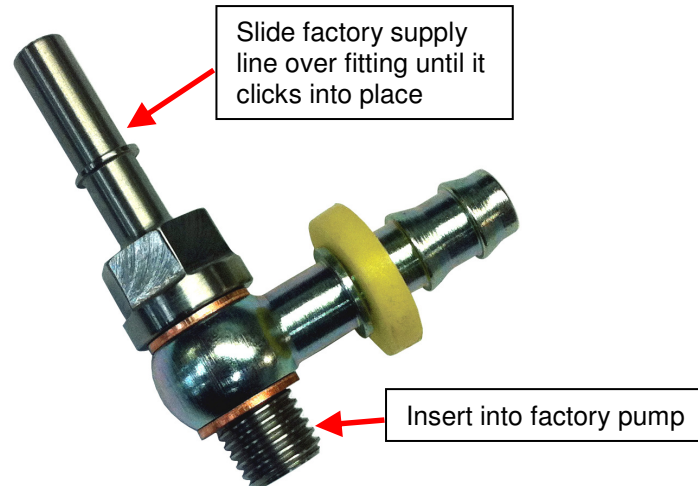


Figure 11 - Factory Pump Supply Fitting (hose not shown)

A5. Connect the factory supply line to the end of the new fitting as shown at the end of this section.

A6. Remove the banjo bolt from the return line on the factory injection pump. Replace this fitting with a 12mm banjo to JIC-6 fitting (#22, Figure 1 and brass washers, as with the supply line.

A7. Locate the new return line (#13, Figure 1). Connect the 45° fitting to the return fitting in the factory pump. Route the line around the supply line and connect the straight fitting to the fitting in the new pump as shown below.

Note: When routing the line, make sure it will not touch the hose. Engine vibration can cause the braided line to rub through the rubber line.

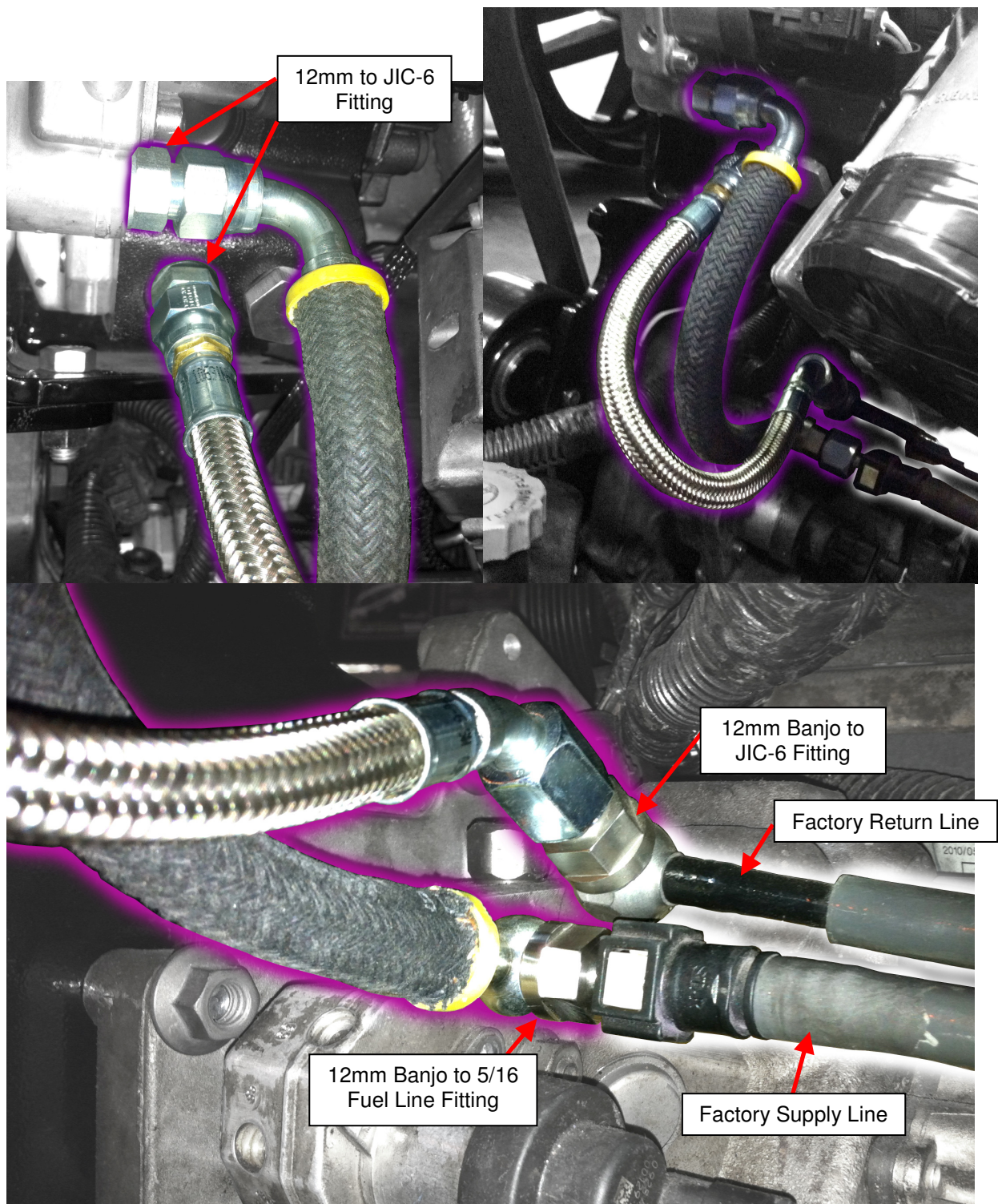


Figure 12 - Factory Lift Pump Plumbing

Option B – Single Aftermarket Lift Pump:

B1. Remove the factory fuel supply line between the fuel filter housing and factory injection pump.

B2. Remove the quick disconnect from the injection pump.

B3. Install a 12mm banjo to JIC-6 fitting, a barbed 12mm banjo fitting and sealing washers in its place. Orient the barbed fitting up and away from the motor. Use the supplied barbed to JIC-6 brass fitting (#19, Figure 1) to connect the lift pump to the injection pump.

B4. Connect the braided stainless return line as described in Option A.

B5. If an aftermarket lift pump was installed prior to the Twin CP3 installation, it may be necessary to extend the 3/8 fuel line supplying the pumps. In this case, use the supplied 3/8 union.

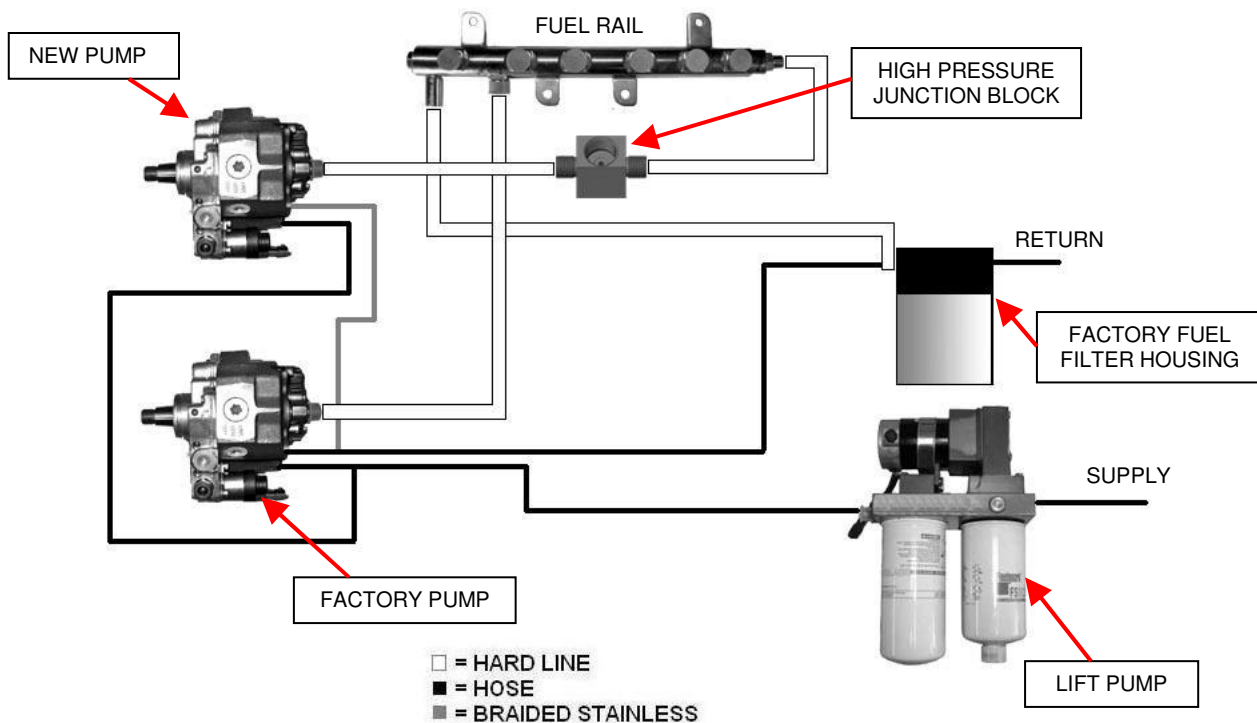


Figure 13 - Single Lift Pump System

31. Install the Twin CP3 Billet Pulley (#2, Figure 1) and nut (#17, Figure 1). Torque the pulley nut to **52 ft-lbs**.

32. Install the new ATS radiator hose in place of the factory hose reusing the factory clamps. Snap the radiator hose into the clamp on the support bracket.

33. Unplug the factory CP3 regulator harness from the factory pump.

34. Connect the factory harness to the ATS Twin CP3 controller harness and connect the two male connectors into the existing and new CP3 pump fuel pressure regulators.
35. Using the Velcro provided, attach the controller to the top of the fuse box or in another convenient location away from any excessive heat.
36. Connect the black ground lead to the negative (-) terminal on the battery.
37. Connect the red power wire to the positive (+) terminal on the battery. The CP3 electronics must have full time power to avoid extremely high rail pressure during vehicle startup. The electronics do not pull enough current to drain the battery. **Make sure a 7.5 Amp or 10 Amp fuse is in the fuse holder.**
38. Install the ATS accessory belt as shown in Figure 1. Be sure to tighten the tensioner bolt if it was removed. Note: the belt can be difficult to install. Dodge changed the A/C compressor in 2010 and the tensioner will contact the compressor before it can swing all the way down.

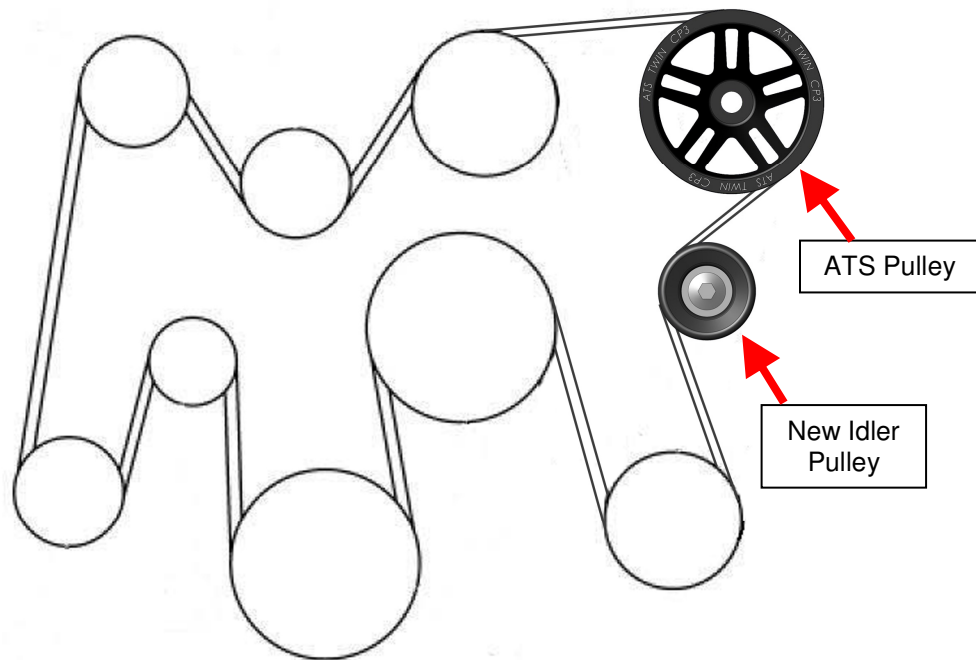


Figure 14 - Belt Routing

39. Refill engine coolant using approved coolant.
40. Remove any towels or rags used to absorb fuel leakage during installation.
41. Reinstall engine oil dipstick.
42. Reconnect the (-) negative battery terminals.

43. Turn the ignition to the ON position without starting the vehicle. Check for fuel leaks. If no leaks are present, start the vehicle. It may take a few tries to because the fuel lines start empty. If no leaks are present at idle, drive the vehicle being sure to use the entire throttle range. Park the vehicle and check for signs of leaking fuel. Pay special attention to high pressure fittings in the rail and on the pump.
44. If no leaks are found, reinstall the plastic engine cover to complete the installation.

Have Any Questions?

Thank you for purchasing the ATS Twin CP3 Kit. Please check our website at <http://www.atsdiesel.com> for technical support and other performance products such as the 5-Star™ torque converter, ATS High Performance Valve Body and ATS High Performance Transmission along with our full line of power enhancers. Please call or e-mail our Technical Service Department, 8:00am to 5:30pm Mountain Standard Time, Monday through Friday.

Contact Information

Toll Free: 800-949-6002
Local: 303-431-7973
Fax: 303-431-0135
Website: www.ATSDiesel.com
Email: info@ATSDiesel.com

We strive to make our instructions as clear and complete as possible. To achieve this, our instructions are under constant construction. We encourage you to visit our website to check for the most up-to-date manuals and diagrams as well as other information. If you have any suggestions as to how we can improve this installation manual, let us know at <mailto:Suggestions@ATSDiesel.com>.

Bill of Materials

1. Dodge Twin CP3 Injection Pump 701-030-2326
 - (1) Rear Port High Pressure Fitting 701-002-1000
 - (2) 12mm to JIC-6 Fitting 701-044-1000
 - (1) High Pressure Port Plug 701-042-1000
 - (1) Fuel Injection Pump 97720662
2. Twin CP3 Pulley 701-029-2272
3. Twin CP3 Radiator Hose 701-010-2356
4. Bracket, Radiator Hose Support 701-040-2326
5. Bracket, Pump Support / Secondary Pulley Mount 701-050-2272
6. Pulley, Idler 7C3Z-8678-BB
7. 2 1/8" Polypropylene Clamp 2339T36
8. 8-Rib Serpentine Belt 701-033-2272
9. Backside High Pressure Steel Fuel Line 701-016-2326
10. Frontside High Pressure Steel Fuel Line 701-011-2326
11. High Pressure Junction 701-018-2326
12. High Pressure Junction Bracket, Adjustable 2-Piece Design 701-015-2356
13. Steel Braided Return Line 701-025-2356
14. Bracket, CP3 Pump Mount 701-013-2326
15. Twin CP3 Control Harness 701-019-2272
16. 24" of 3/8" Fuel Line 821-6
17. CP3 Pulley Nut 701-017-1000
18. 3/8 Barbed 12mm Banjo Fitting 701-003-1000
19. (2) JIC-6 Female Barbed Fitting 701-047-1000
20. 3/8 Barbed Union 701-046-1000
21. 90° JIC-6 Barbed Fitting 701-045-1000
22. (2) 12mm Banjo Bolt to JIC-6 Fitting 701-008-1000

- 23. (4) 12mm Copper Sealing Washers 701-048-1000
- 24. High Pressure Fitting 701-005-1000
- 25. 12mm to JIC-6 Fitting 701-044-1000
- 26. 12mm Banjo to 5/16" Quick Connect Fuel Fitting 701-051-1000
- 27. Thread Locking Compound .02oz Tube 91458A56
- 28. Rail Pressure Harness Extension Kit 701-032-2272
- 29. Hardware Kit 701-001-2356
 - (3) M10 X 1.5 X 30 Flange Bolt
 - (3) M8-1.25 X 50 Socket Head Cap Screw
 - (4) M8-1.25 Flange Nuts
 - (4) 8mm Flat Washer
 - (3) 10mm Flat Washer
 - (2) M6-1.0 X 12 Hex Head Cap Screw
 - (2) M6 Lock Washer
 - (2) M6 Washer
 - (3) 3/8-16 X 2 Flange Bolt
 - (3) 3/8-16 Nut
 - (3) 3/8 Lock Washer
 - (3) 3/8 Washer
 - (1) M8-1.25 X 25 Cap Screw
 - (1) 10-24 X 3/4 Button Head Screw
 - (1) 10-24 Nylon Insert Nut
 - (2) M8-1.25 X 16 Cap Screw

Not Pictured:

- 30. ATS Instructions Folder
 - (1) ATS Instructions 701-900-2356-INST
 - (2) ATS Stickers
- 31. ATS Warranty www.atsdiesel.com/warranty