



**Installation Manual v1.2:  
Twin CP3 Fuel Injection Kit  
2007-2009 Dodge 6.7L**



**Figure 1 - Full Kit Photo**



**Figure 2 - Hardware Kit**

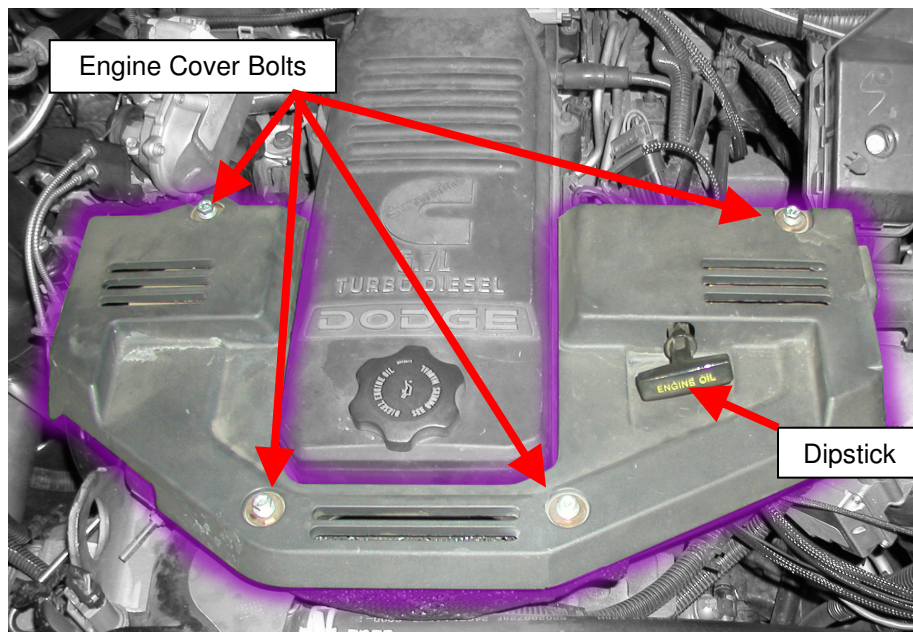
**Please read all instructions before installation.**

**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.

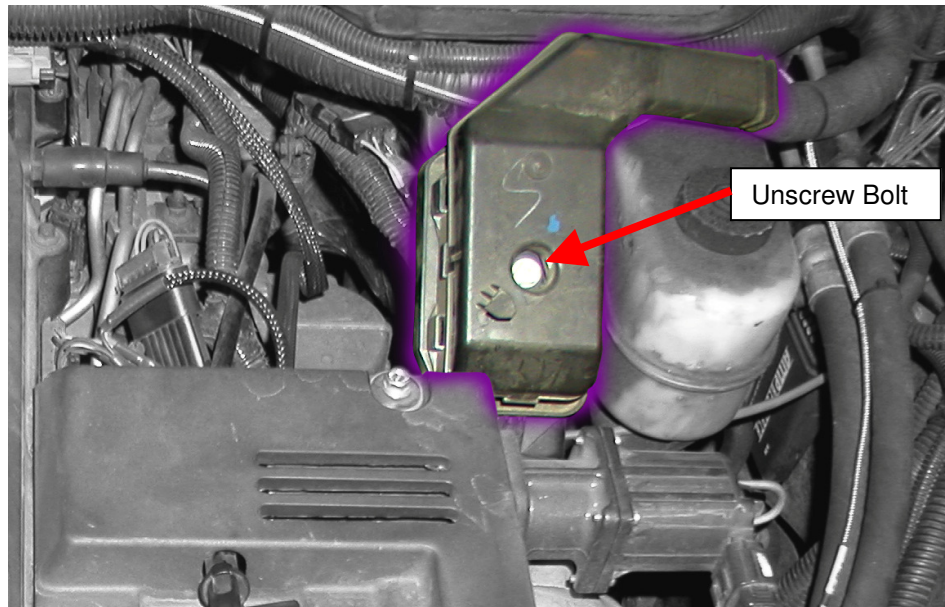


**Figure 3 - Engine Cover and Dipstick**

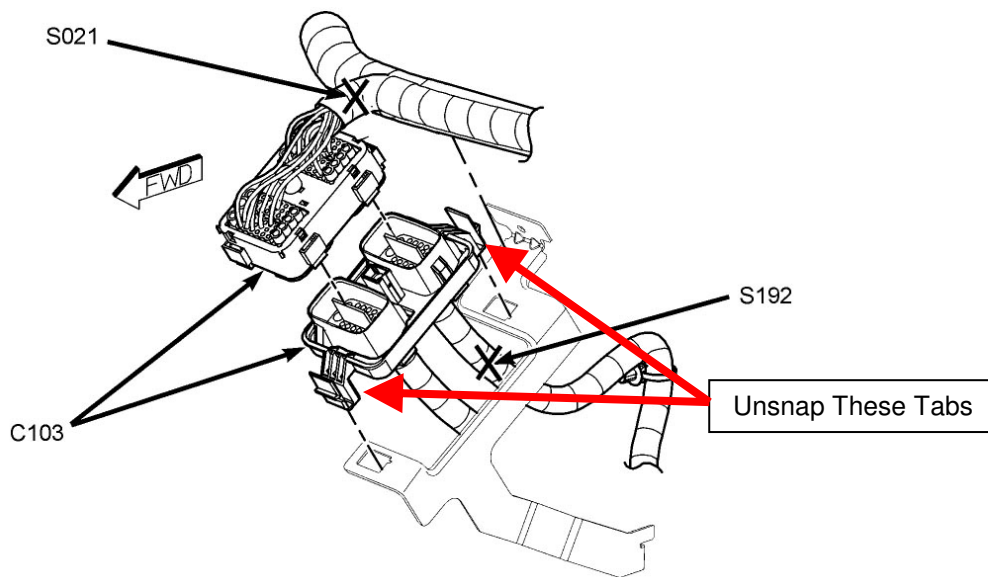
6. Remove the factory serpentine belt and discard it.

**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. Loosen the banjo bolt holding the fuel return line to the fuel filter housing.
10. Remove the banjo bolt and washers from the return line located at the front of the fuel rail and set them aside.
11. Loosen the high pressure supply line fitting on the back of the factory pump. Remove the high pressure supply line from the rail and rotate it out of the way.
12. Remove the C103 transmission module connector bolted to the driver side cowl and rotate it out of the way. Unscrew the bolt in the center and remove the top half of the connector. Unsnap the lower half out of the mount bracket. This may provide enough room to access the back of the fuel rail; however, removing each connector from the bezel will provide easy access. It is also possible to access many of the components by removing the driver's side front tire and fender liner.



**Figure 4 – Transmission Module Connector Location**

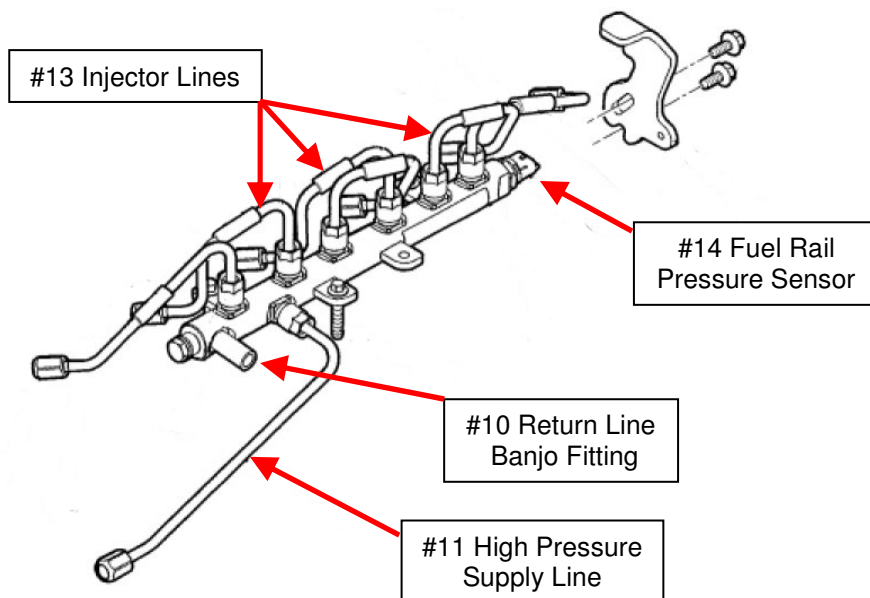


**Figure 5 - Transmission Module Connector**

13. Label and remove all the high pressure lines from the rail and the fuel injector bodies 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.

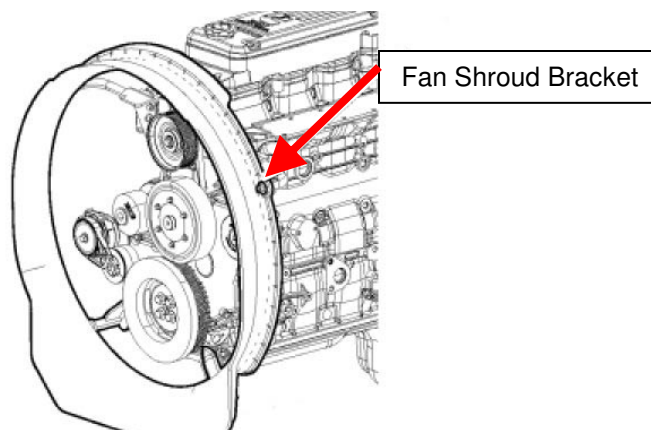
14. Remove the electrical connector from the fuel pressure sensor located on the back of the fuel rail.



**Figure 6 - Fuel Rail Assembly**

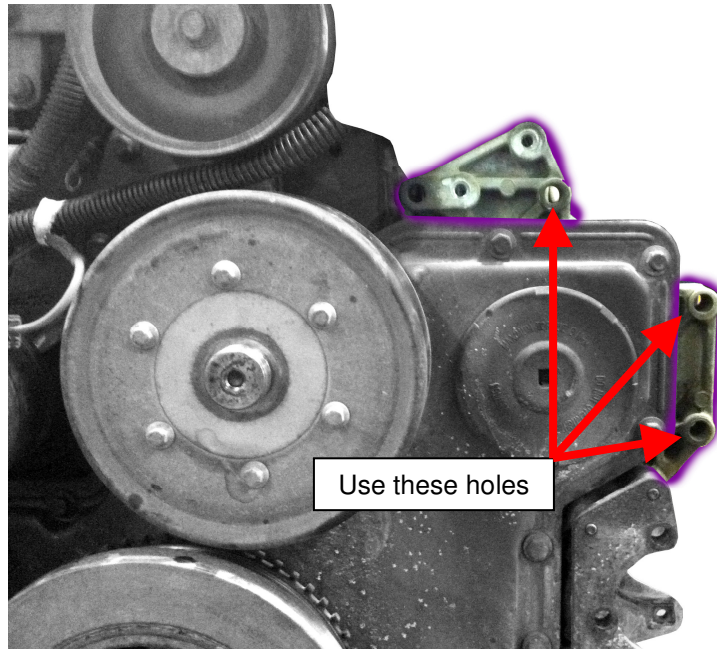


15. Remove the three 10mm bolts and 10mm stud holding the fuel rail in place. Carefully slide the fuel rail out of the engine compartment.
16. Clamp the fuel rail in a vise using the mount flanges used to bolt the rail to the engine. Carefully remove the fuel pressure sensor.
17. Locate the high pressure fitting (#23, 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**.
18. Install the factory pressure sensor into the high pressure junction (#10, Figure 1) and torque the sensor to **52 ft-lbs**. Be sure to apply a small amount of grease to the sealing surface of the sensor before installing.
19. Reinstall the fuel rail using the factory hardware. Apply thread locking compound to the threads and torque them to **18 ft-lbs**.
20. Install the #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.
21. Loosely install the high pressure junction on the high pressure junction bracket (#11, Figure 1).
22. Unscrew the fuel filter housing bolts approximately 1/8". Slide the high pressure junction bracket in between the bolt heads and the fuel filter housing. Re-torque the bolts.
23. 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.
24. Plug the fuel pressure sensor connector into the high pressure junction.
25. Remove the driver side upper fan shroud bracket by removing the nut on the shroud and the two bolts in the front of the head.



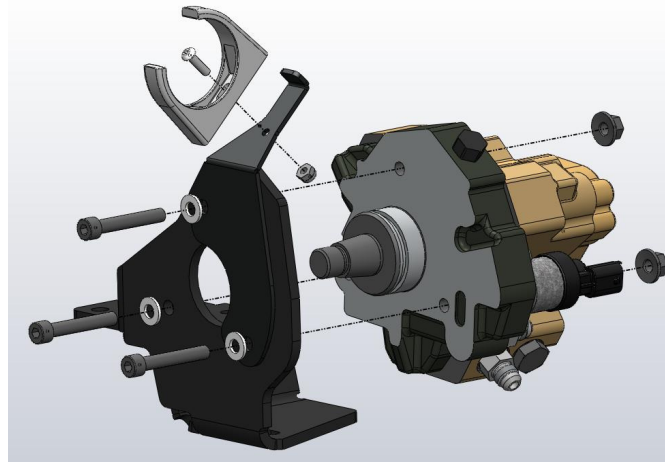
**Figure 7 - Fan Shroud Bracket**

26. Using the supplied 3/8" bolts and flange nuts, loosely install the new fan shroud support bracket to the bracket below the intake manifold. Slide the fan shroud over the support bracket and install the factory 8mm nut hand tight. Leaving this piece loose will allow adjustment when installing the pump bracket.



**Figure 8 - Timing Cover Bolts**

27. 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.

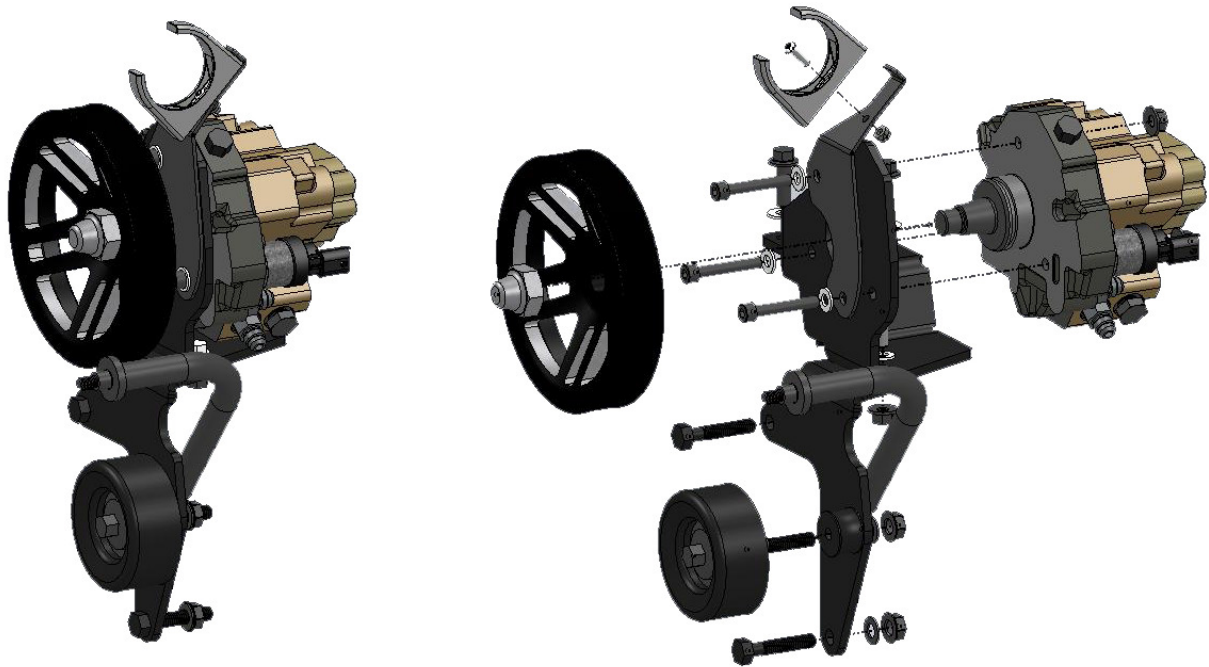


**Figure 9 - Pump Bracket Assembly**

28. 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 32 to determine the correct installation procedure for your application.

29. Install the 8mm bolt and flange nut through the slotted hole in the bottom of the pump bracket and the top of the shroud support bracket. Tighten all fan shroud support bracket hardware. The completed assembly should look like the image below.



**Figure 10 – Pump Mounting and Bracket Assembly**

30. Install front-side high pressure line between the backside high pressure fitting on new injection pump and the high pressure junction. Torque fittings to **30 ft-lbs**. Once the lines are tight, torque down the two bolts in the adjustable junction block mounting bracket.
31. Install the new idler pulley (#26, 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**.
32. There are two common ways to supply fuel to the new pump:
- Use the factory lift pump and share the supply between the two injection pumps (adequate, but limits performance gains).
  - Supply the injection pumps with an aftermarket lift pump and filter (performance applications).

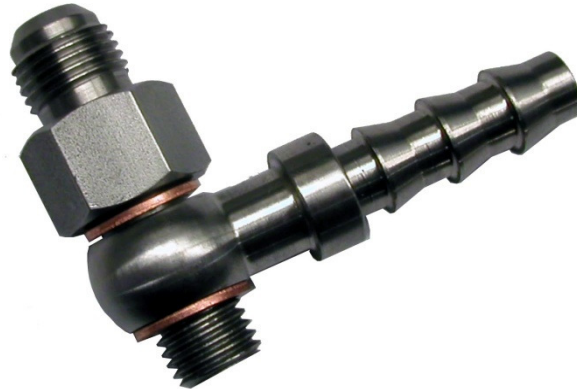
Supplies are included with the ATS Dodge Twin CP3 Kit to help connect the fuel lines for both options. Some aftermarket lift pump kits use different sized lines and fittings. The fittings included in the kit will help but may work with all aftermarket lift pump kits.

#### Option A – Factory Lift Pump:

A1. If the factory lift pump will supply both pumps, remove the factory plastic supply line.

A2. Remove the fuel supply fitting from the factory fuel filter housing and replace it with a 12mm to JIC-6 fitting (#24, Figure 1), removing the washer but leaving the o-ring in place.

A3. Remove the factory quick-disconnect supply fitting from the injection pump and replace it with a 12mm banjo to JIC-6 fitting (#21, Figure 1), 2 copper sealing washers and a barbed 12mm banjo fitting (#17, Figure 1) as shown. Orient the barbed fitting such that it points up and away from the engine.



**Figure 11 - Factory Pump Supply Fitting**

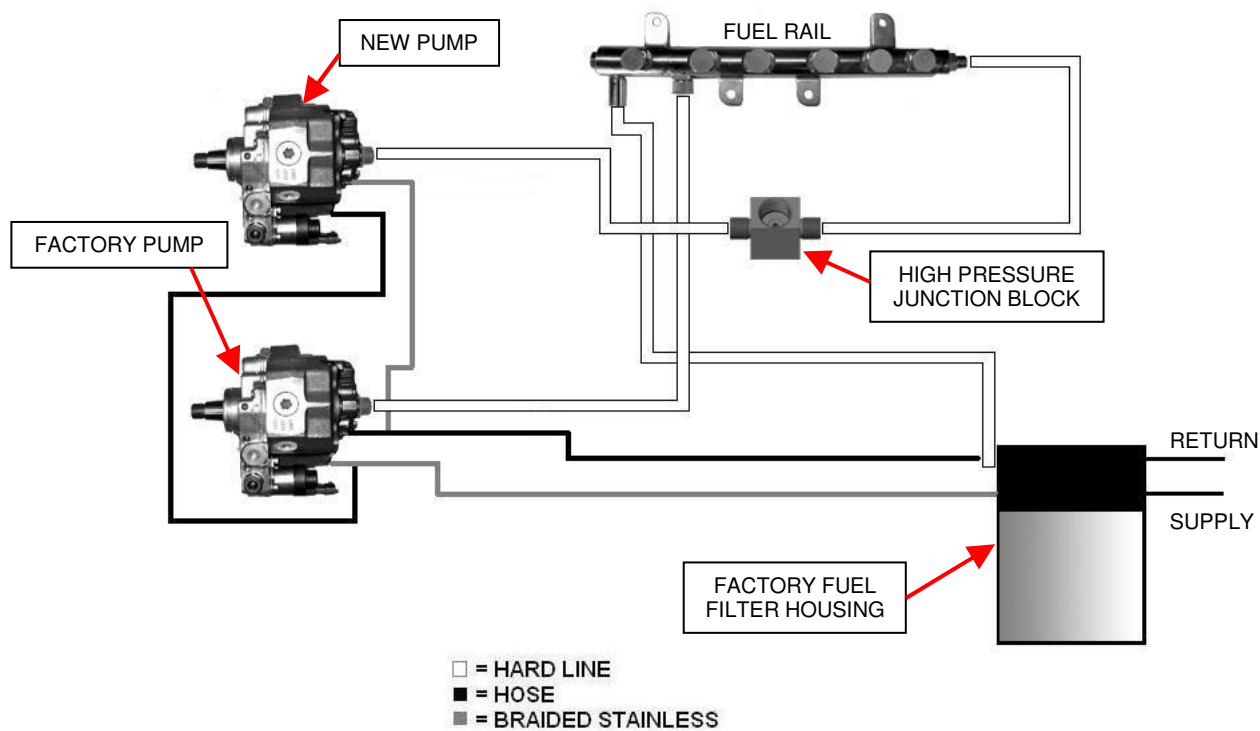
A4. Using the supplied braided stainless steel supply line (#12, Figure 1), connect the JIC-6 fitting in the fuel filter housing to the JIC-6 fitting in the factory lift pump.

A5. Remove the banjo bolt from the return line on the factory injection pump. Replace this fitting with a 12mm banjo to JIC-6 fitting. Install a female JIC-6 barbed fitting (#18, Figure 1) on the banjo fitting.

A6. Using the supplied 3/8" fuel line (#15, Figure 1), connect the factory injection pump to the brass barbed return fitting on the new injection pump.

A7. Using the 3/8" fuel line connect the barbed banjo fitting to the barbed 90° fitting installed in the pump.

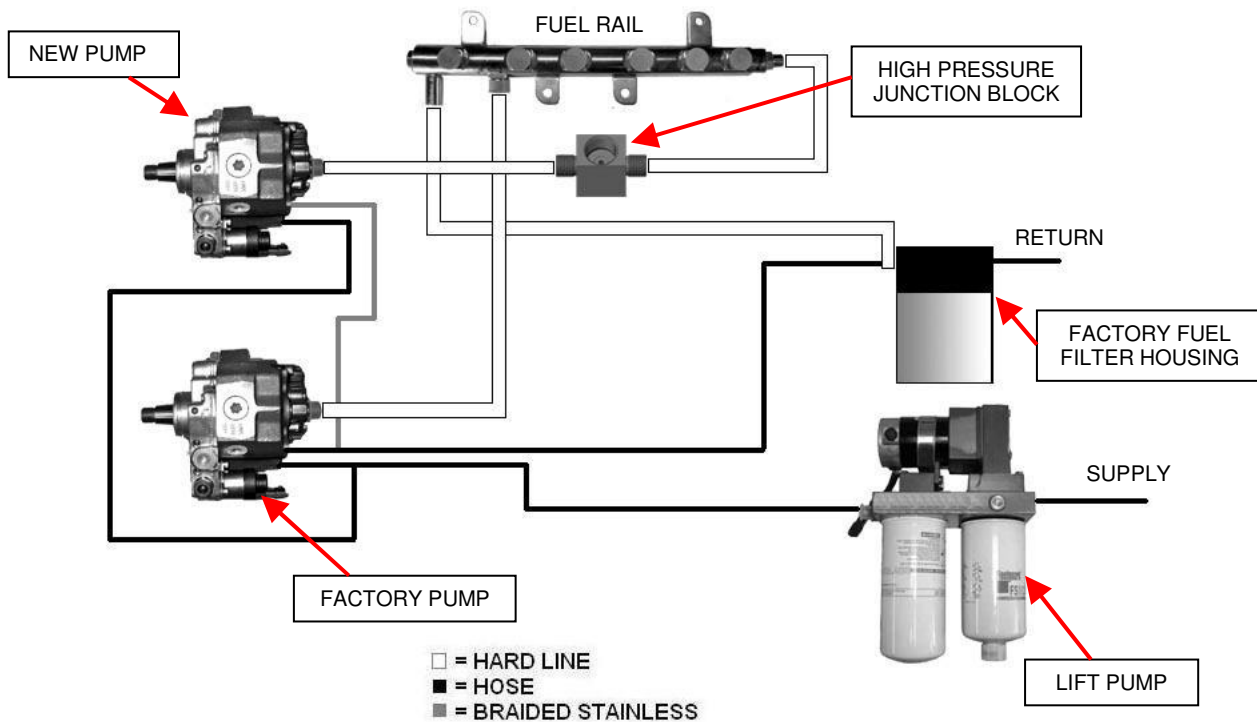




**Figure 12 - Use of Factory Lift Pump**

Option B – Aftermarket Lift Pump:

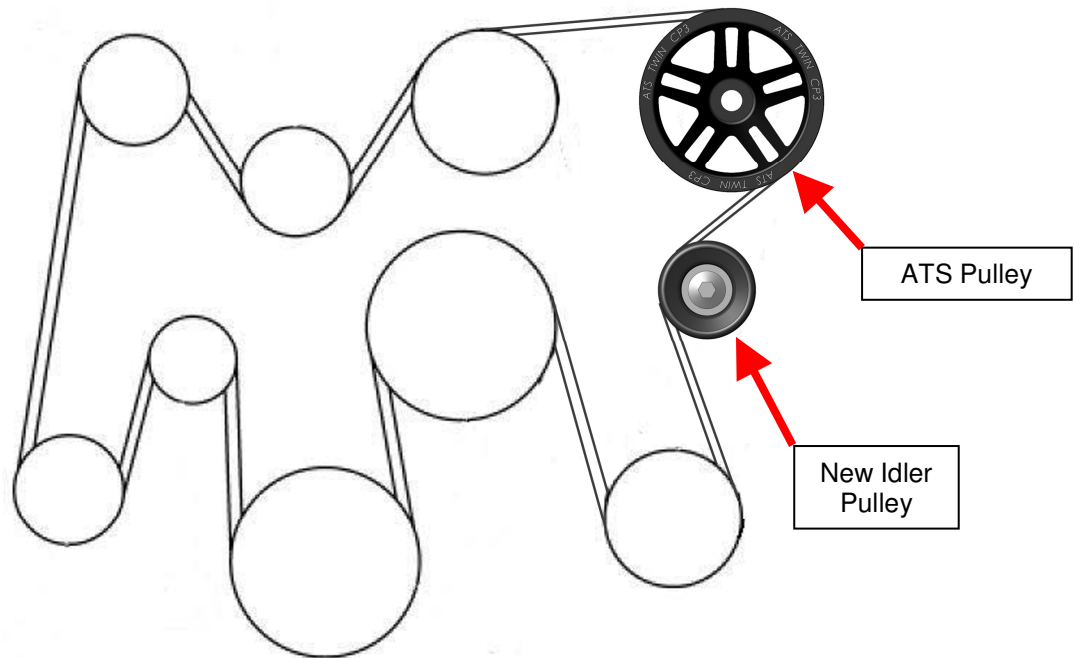
- B1. Remove the factory fuel supply line between the fuel filter housing and factory injection pump.
- B2. Remove the quick disconnect from the injection pump.
- B3. Install a 12mm banjo to JIC-6 fitting, a barbed 12mm banjo fitting and sealing washers in its place. Orient the barbed fitting up and away from the motor. Use the supplied barbed to JIC-6 brass fitting (#18, 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**

33. Install the pulley and nut (#16, Figure 1). Torque the pulley nut to **52 ft-lbs**.
34. 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.
35. Unplug the factory CP3 regulator harness from the factory pump.
36. 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.
37. Using the Velcro provided, attach the controller to the top of the fuse box or in another convenient location away from any excessive heat.
38. Connect the black ground lead to the negative (-) terminal on the battery.
39. 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.**

40. Install the ATS accessory belt as shown in Figure 1. Be sure to tighten the tensioner bolt if it was removed.



**Figure 14 - Belt Routing**

41. Refill engine coolant using approved coolant.
42. Remove any towels or rags used to absorb fuel leakage during installation.
43. Reinstall the transmission module connector by reversing the procedure in step 12.
44. Reinstall engine oil dipstick.
45. Reconnect the (-) negative battery terminals.
46. 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.
47. 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](http://www.ATSDiesel.com)

Email: [info@ATSDiesel.com](mailto: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 701-010-2326
4. Bracket, Radiator Hose Support 701-040-2326
5. Bracket, Pump Support / Pulley Mount / Fan Shroud Support 701-050-2290
6. 2-1/8" Polypropylene Clamp 2339T36
7. 8-Rib Serpentine Belt 701-033-2272
8. Backside High Pressure Steel Fuel Line 701-016-2326
9. Frontside High Pressure Steel Fuel Line 701-011-2326
10. High Pressure Junction 701-018-2326
11. Adjustable High Pressure Junction Bracket 701-015-2326A
  - (1) Junction Bracket, Engine Side 701-015-2326A D1
  - (1) Junction Bracket, Fitting Side 701-015-2326A D2
  - (2) Flange Head Cap Screw, M8-1.25x16mm
  - (2) Nylon Insert Flange Lock Nut M8-1.25
12. Steel Braided Supply Line 701-023-2326
13. Bracket, CP3 Pump Mount 701-013-2326
14. Twin CP3 Control Harness 701-019-2272
15. 24" of 3/8" Fuel Line 821-6
16. CP3 Pulley Nut 701-017-1000
17. 3/8" Barbed 12mm Banjo Fitting 701-003-1000
18. (2) Female JIC-6 to 3/8" Barbed Fitting 701-047-1000
19. 3/8" Barbed Union 701-046-1000
20. 90° JIC-6 Barbed Fitting 701-045-1000

- 21. (2) 12mm Banjo Bolt to JIC-6 Fitting 701-008-1000
- 22. (4) 12mm Copper Sealing Washers 701-048-1000
- 23. High Pressure Fitting 701-005-1000
- 24. 12mm to JIC-6 Fitting 701-044-1000
- 25. Thread Locking Compound .02oz Tube 91458A56
- 26. Backside Idler Pulley 7C3Z-8678-B
- 27. Hardware Kit 701-001-2326
  - (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

Not Pictured:

- 28. ATS Instructions Folder
  - (1) ATS Instructions 701-900-2326-INST
  - (2) ATS Stickers
- 29. ATS Warranty [www.atsdiesel.com/warranty](http://www.atsdiesel.com/warranty)