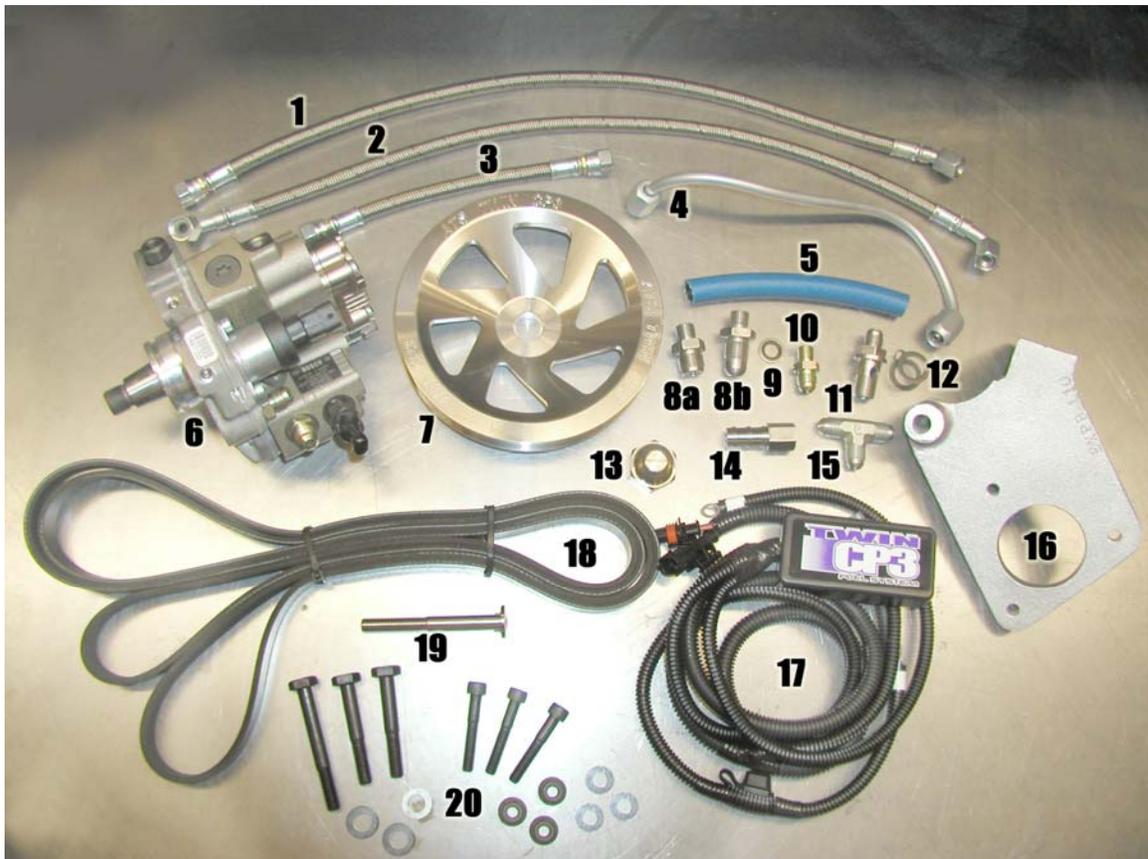




**Installation Manual v1.3:  
ATS Twin CP3 Kit  
2001-2004 GM LB7 Duramax**

**Please read all instructions before installing the ATS Twin CP3 Kit**

Thank you for purchasing the ATS Twin CP3 Kit. The picture below shows all the components included in the kit. Please note that only one rail fitting will be included. Two rail fittings (8a. and 8b.) are shown in the picture. The 2001-2002 LB7 fuel rail requires a different fitting than the 2003-2004 LB7 fuel rail. Please check before beginning the installation to make sure all components are in the supplied LB7 Twin CP3 kit. Two ½" barbed to JIC-6 fittings (#14 in **Figure 1**) are provided in the kit for installation variations. The backside large idler pulley is not pictured.

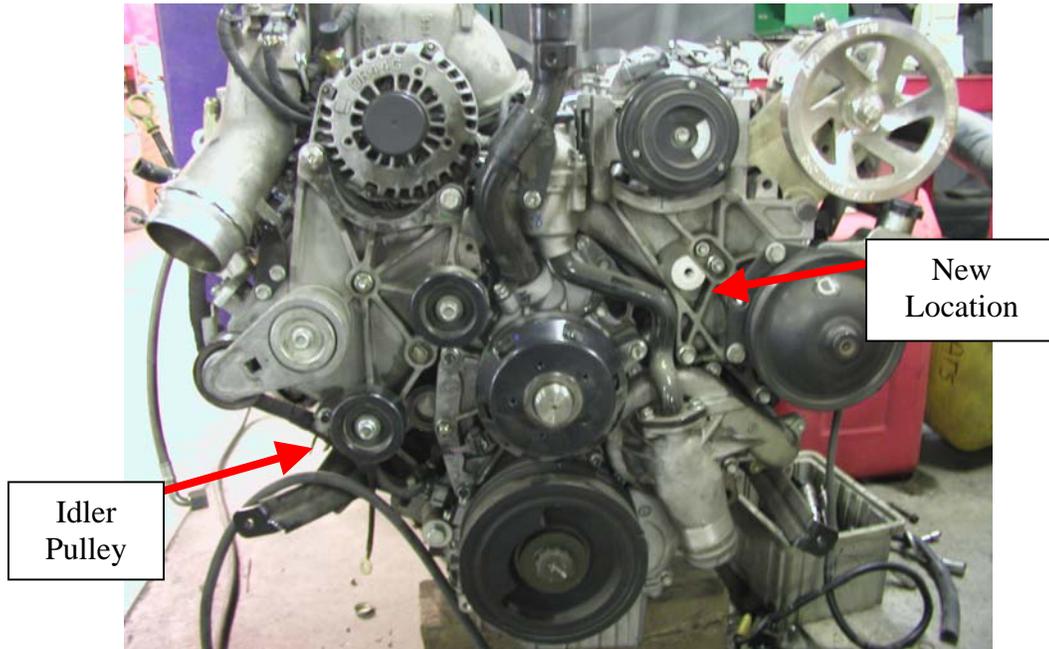


**Figure 1: LB7 Twin CP3 Kit**

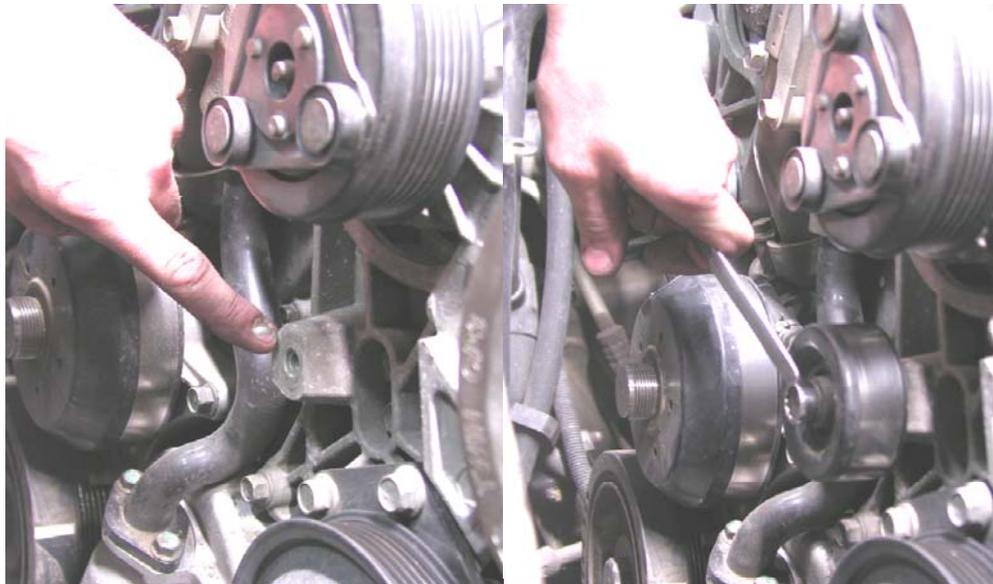
**IMPORTANT: Check to make sure the ATS Twin CP3 kit is complete.**

**Installation**

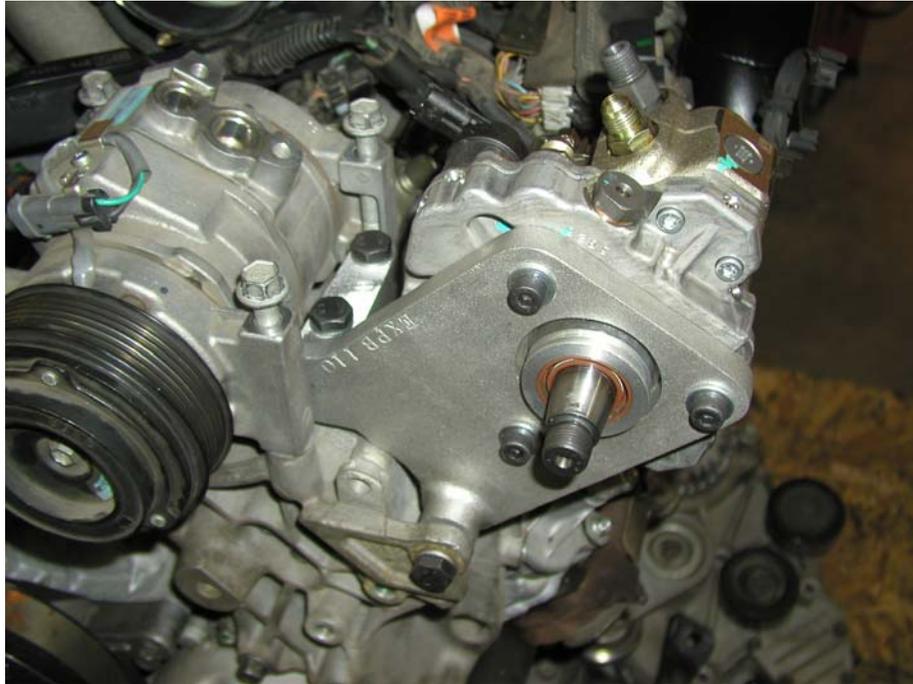
1. Disconnect the negative (-) terminals from both batteries.
2. Remove the serpentine belt by releasing the tensioner.
3. Remove the idler pulley shown in figure 2. Note: the engine shown is not a 2001-2004 model, but the idler pulley locations are accurate.

**Figure 2: Relocate Idler Pulley**

4. Reinstall the idler pulley in the new location shown in figure 2.

**Figure 3: Idler Pulley Installed in New Location**

5. Install the new CP3 pump to the mount using (3) 8mm x 1.25 x 50mm socket cap bolts, (3) flat washers and (3) flange nuts.



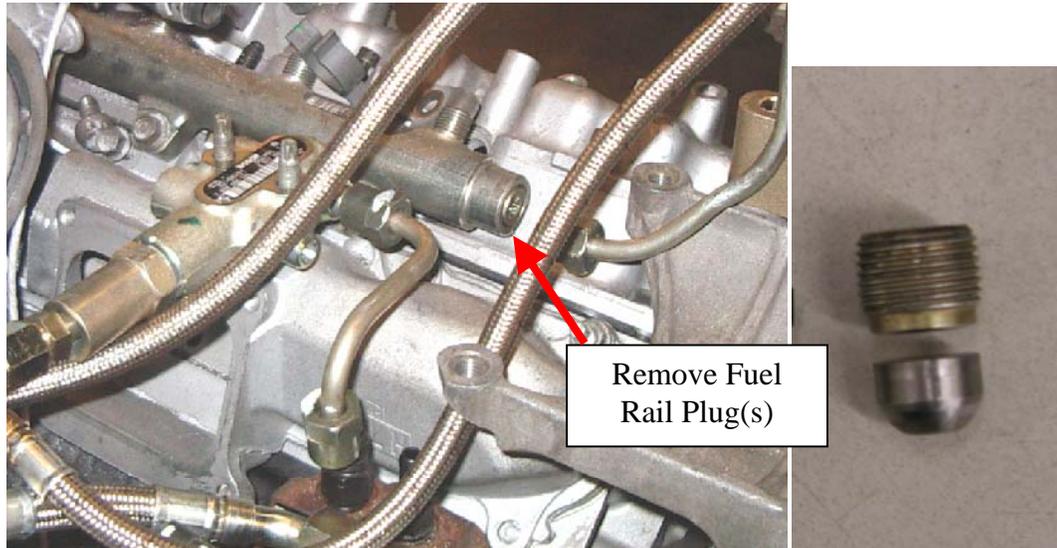
**Figure 4: Pump Mounted On Bracket**

6. Install the new CP3 pump mount onto engine using (2) 10mm x 1.5 x 65mm hex bolts and (1) 10mm x 1.5 x 80mm hex bolt.
7. Install ATS CP3 pulley and nut. Torque pulley nut to 52 ft-lbs.



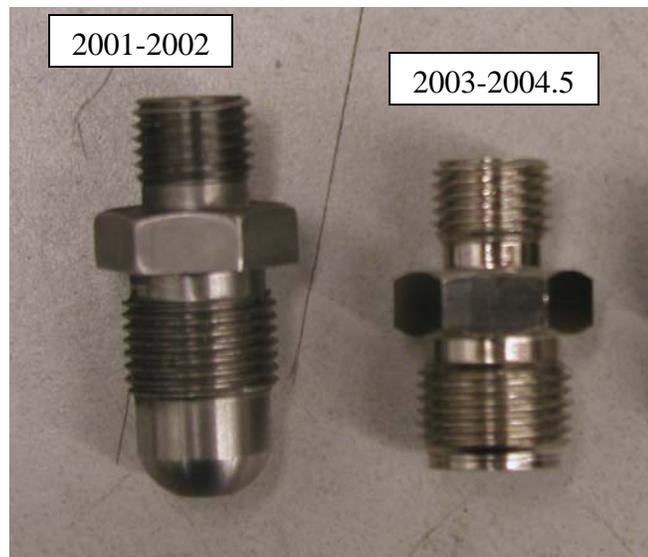
**Figure 5: Pulley Mounted on Pump**

8. **Without disconnecting the AC lines**, remove the AC compressor to gain access to the fuel rail. Lift the AC compressor up and back out of the way. The rubber AC lines will bend and provide enough flexibility to gain access to the fuel rail. Using a T50 Torx, remove the fuel rail plug located on the driver's side near the front of the engine. **Note:** on 2001-2002 models, there is a second plug located behind the threaded plug in the fuel rail that must be removed with a magnet.



**Figure 6: Rail Plug Location and Rail Plugs**

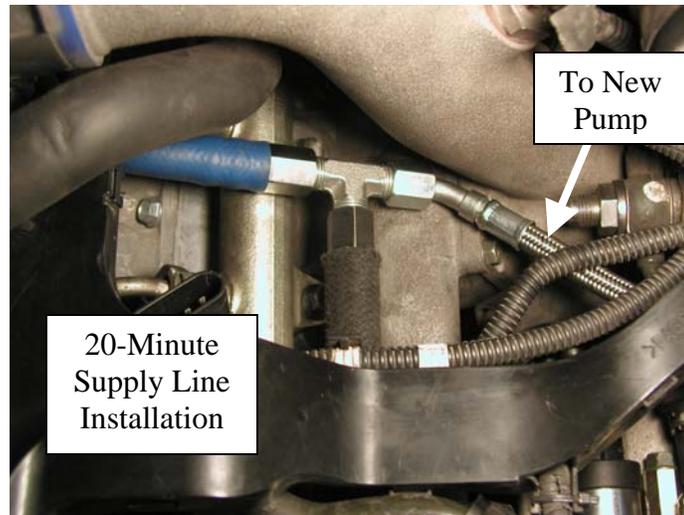
9. Install the supplied fuel rail fitting into the fuel rail. Only **one** of the fittings below will be provided in the ATS LB7 Kit depending on what year was specified when the order was placed (8a and 8b in **Figure 1**).



**Figure 7: Fuel Rail Fittings**

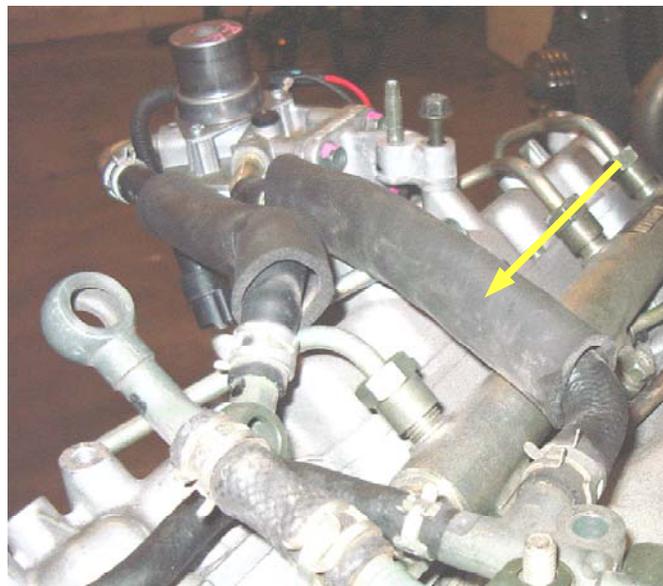
The next section explains how to share the supply line between the two injector pumps. The kit comes with enough supplies for two fuel supply options. The first option requires accessing the factory CP3, located in the valley of the engine, to change the supply fitting on the pump and install a new -6 supply line. A trained technician can complete the -6 supply line installation in two hours. Supplies are included in the kit that will reduce the supply line installation to 20 minutes.

To complete the 20-minute installation, remove the fuel line shown in **Figure 9**. Use the two barbed fittings, -6 Tee and 1/2" fuel line to provide a connection for the second fuel pump supply. Skip steps 10 through 16.



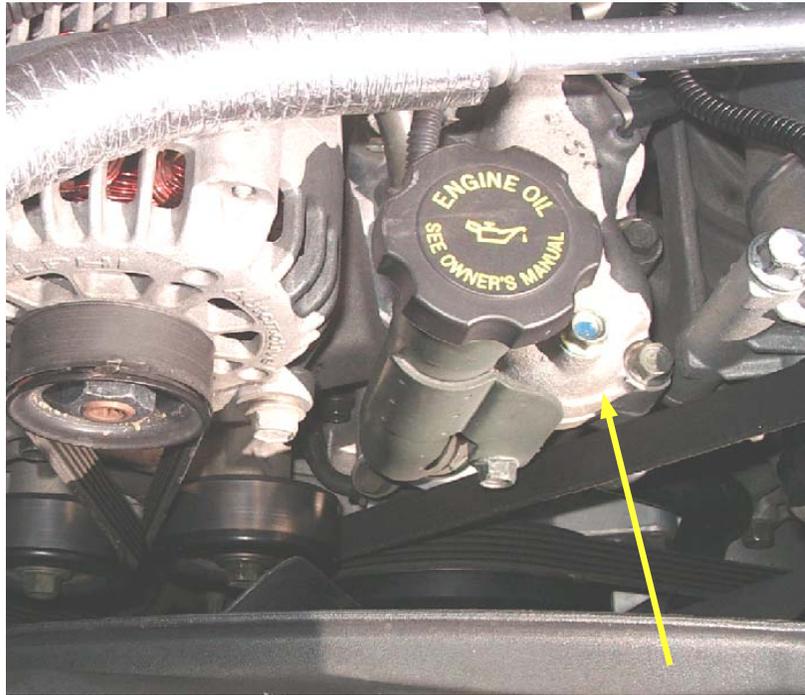
**Figure 8: 20-Minute Fuel Supply Connection**

10. Remove the 1/2" fuel line attached to fuel filter housing outlet.



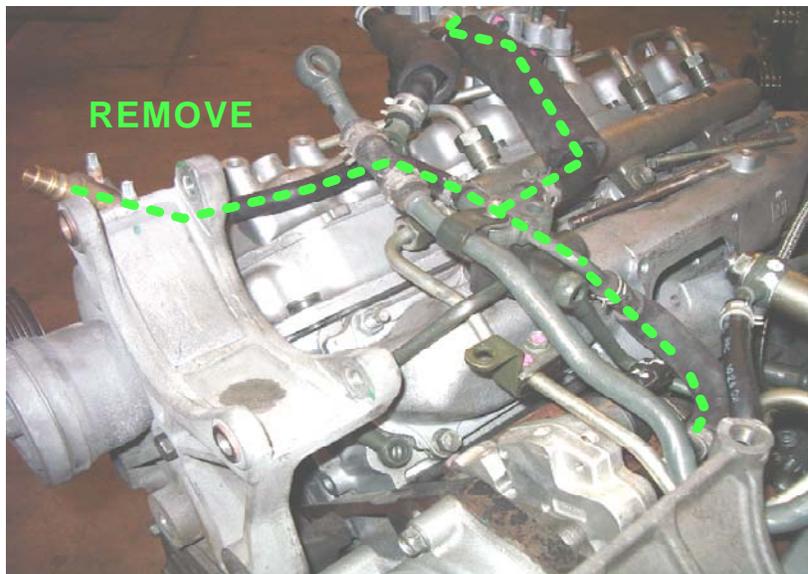
**Figure 9: Factory Fuel Supply Line**

11. Drain engine coolant.
12. Remove the thermostat housing.



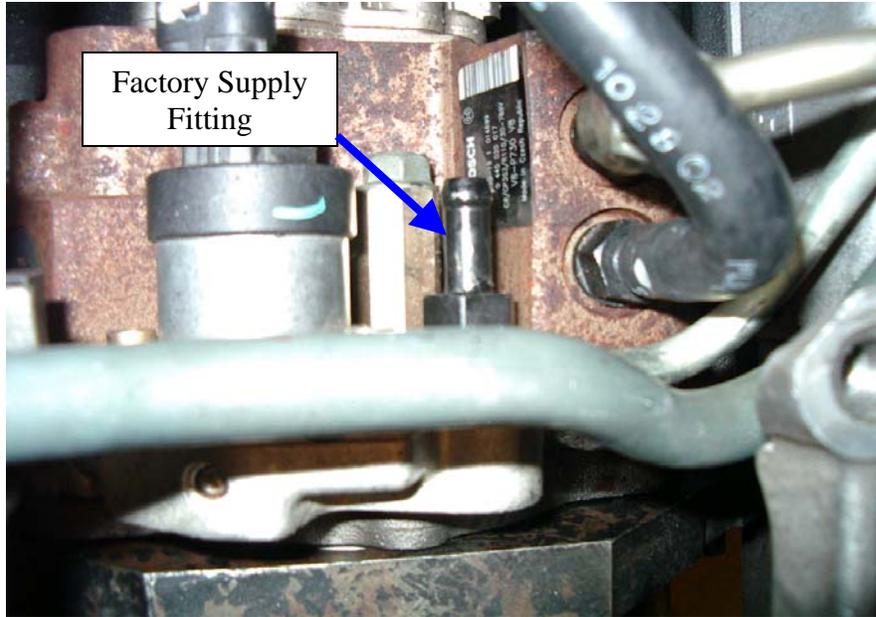
**Figure 10: Thermostat Housing**

13. Disconnect factory fuel supply line from CP3 Pump. Remove attaching bolts and completely remove fuel supply line assembly from engine.



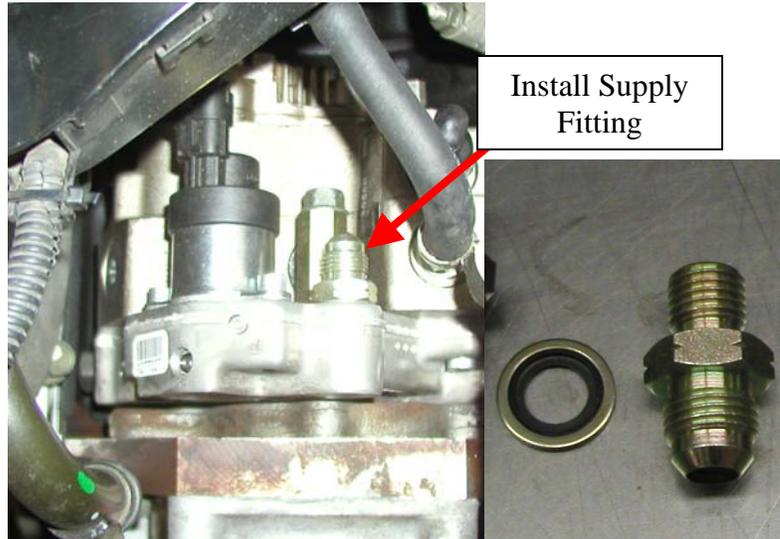
**Figure 11: Factory Supply Line Assembly**

14. Remove the factory supply fitting from the factory CP3 pump.



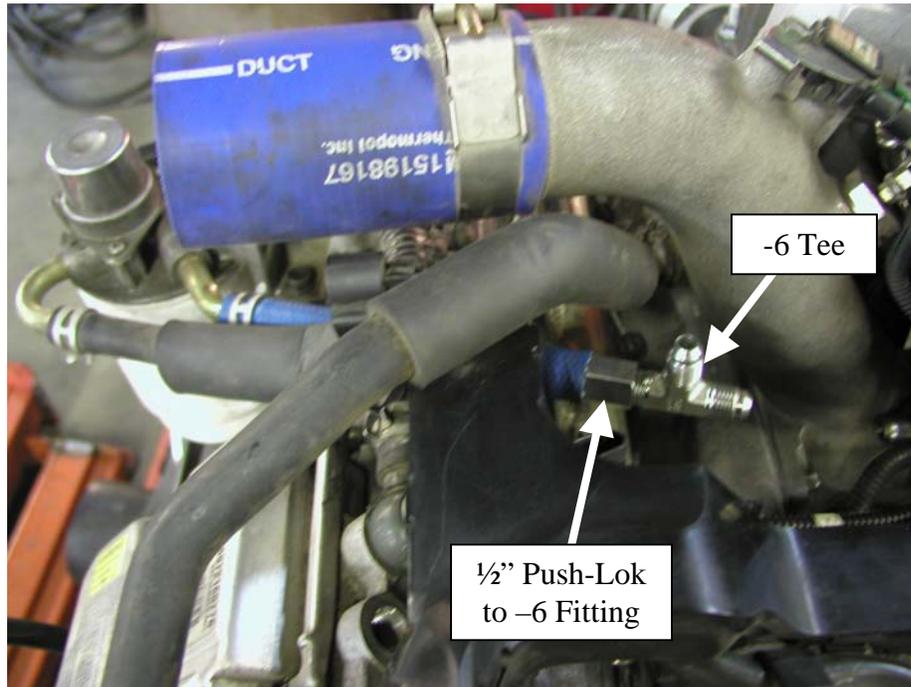
**Figure 12: Factory Supply Fitting Location**

15. Install the -6 supply fitting and seal (#9 and 10 in **Figure 1**) into the factory CP3 pump.



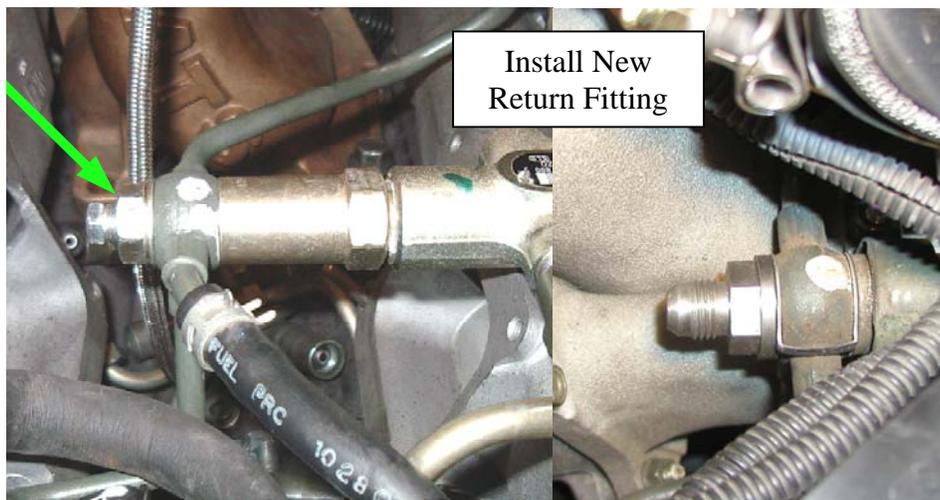
**Figure 13: Supply Fitting for Factory Pump**

- Route supplied  $\frac{1}{2}$ " fuel hose from fuel filter housing to the supplied -6 tee using the provided  $\frac{1}{2}$ " barbed to -6 fitting provided in the kit (#14 in **Figure 1**). Attach hose to fuel filter with existing fuel line clamp.



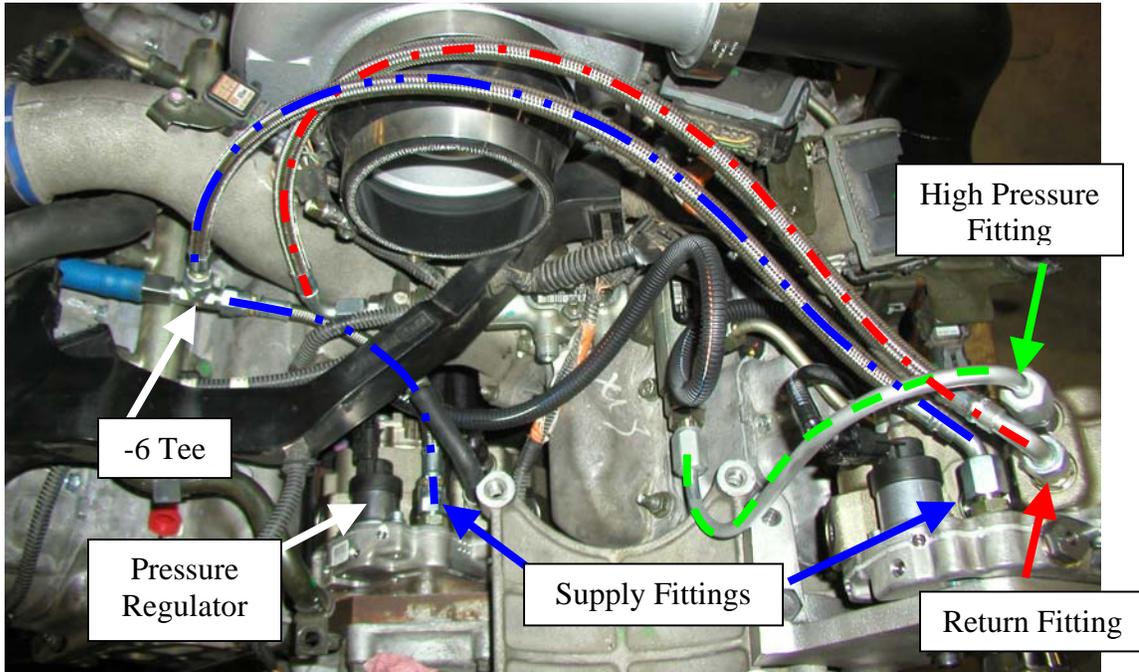
**Figure 14: Supply Line and -6 Tee**

- Remove fuel return banjo bolt from the top of the pressure relief valve (**Figure 15**) and install the return combination JIC-6 banjo bolt with the new seal provided in the kit (#11 and #12 in **Figure 1**).



**Figure 15: Return Fitting Location**

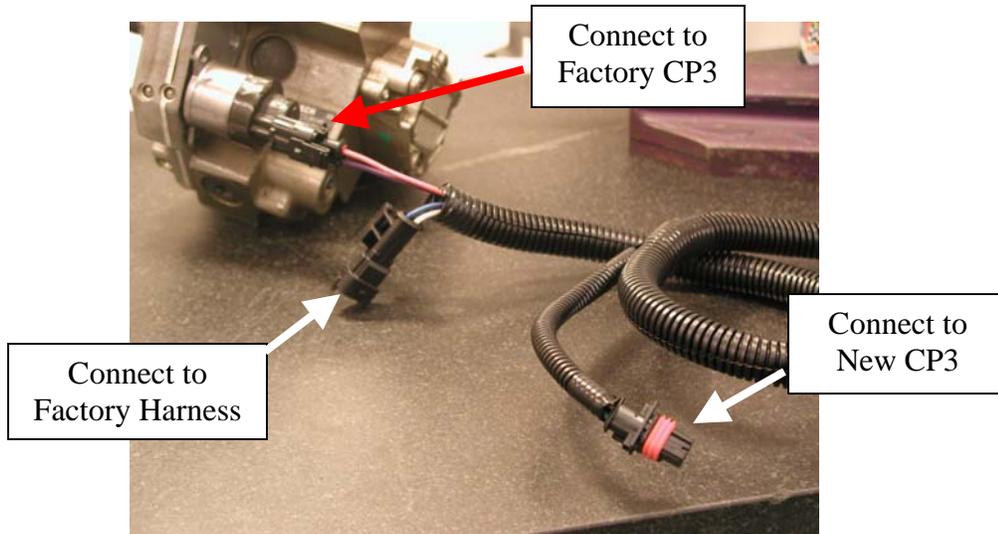
18. Install the return, high pressure and supply fuel lines. Install the return line, 25" overall length with two 90° fittings, from the combo banjo bolt to the return on the new pump. Route the short supply line, 8" overall length with two straight fittings, from the -6 Tee to the factory pump supply fitting. Install the 24" supply line with one straight and one 45° fitting from the -6 Tee to the supply fitting on the new pump. Route the high-pressure line from the pump to the new fitting in the rail.



**Figure 16: Fuel Line Routing**

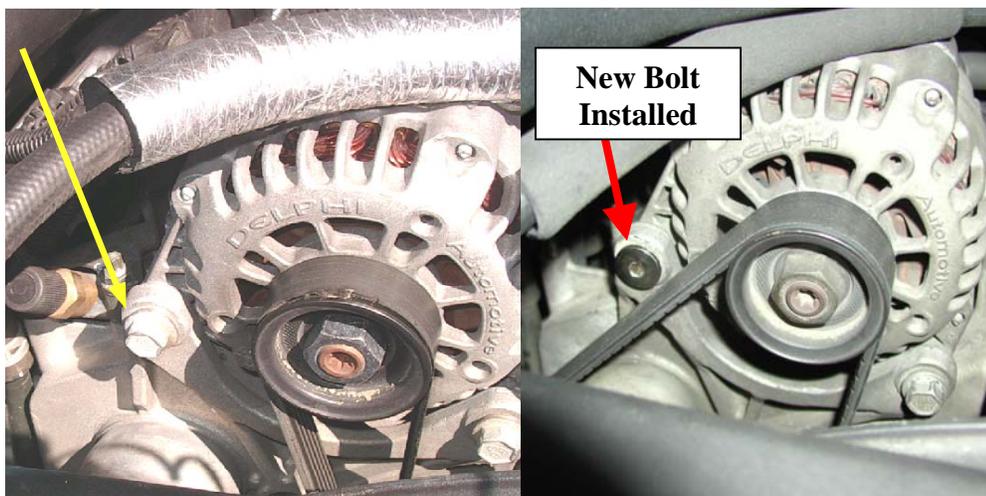
If the 20-minute supply line install method was used, then connect the 45° degree fitting of the supply line to the -6 Tee as shown in **Figure 8** and connect the end with the straight fitting to the pump. The picture above shows the full 2-hour supply line installation with steel braided lines supplying both pumps.

Unplug the fuel pressure regulator connector on the factory CP3 pump. Plug the factory harness connector into female end of supplied electrical harness. Next plug male harness into 1<sup>st</sup> CP3 pump. Plug remaining male harness into 2<sup>nd</sup> CP3 pump. Mount electronics box using supplied Velcro. Connect the red wire with ring connector to the positive (+) terminal on the battery. Connect the black wire with ring connector to the negative (-) terminal on the battery.



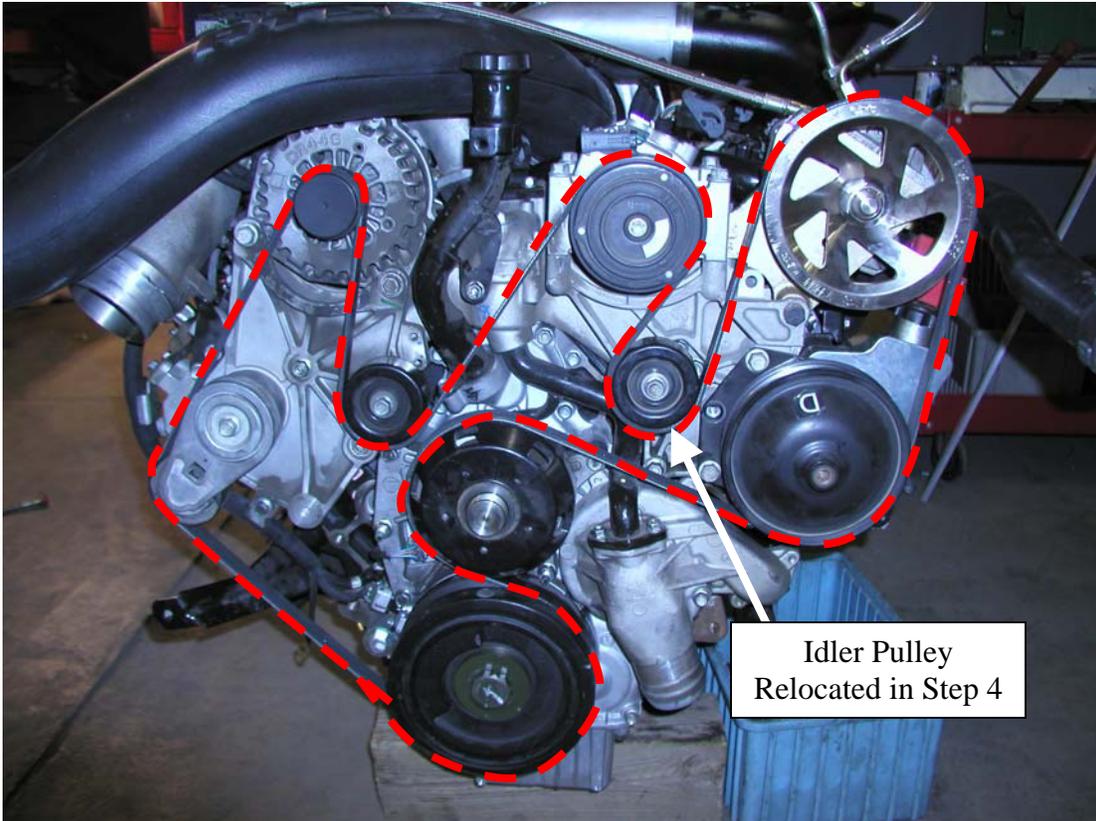
**Figure 16: Control Box Location**

19. If previously removed, install the thermostat housing and refill cooling system.
20. Remove alternator bracket bolt shown in **figure 18** and install the 10mm x 1.5 x 80mm button head bolt (#19 in **Figure 1**) into alternator bracket. Do not over tighten.



**Figure 17: Alternator Bolt Installation**

21. Install the serpentine belt provided in the kit as shown below.



**Figure 19: Serpentine Belt Routing**

22. Double-check the tightness of all fittings and bolts.
23. Reconnect the negative (-) battery cables.
24. Turn on ignition. With ignition on and the engine off, check for any fuel leaks.
25. Start the engine. Verify that no fuel leaks are present and that the serpentine belt is tracking straight.
26. After approximately 100 miles the belt may stretch and cause the tensioner to chatter. When the belt stretches, install the larger idler pulley with washers provided in the kit in place of the factory idler that was relocated in step 4. Use the two washers to ensure proper spacing and belt alignment.

**Have Any Questions?**

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

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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 Technical Support Website (<http://www.atsdiesel.com/ATSWebsite/Technical.asp>) 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. Second Pump Supply Line:
  - (1) Straight 10691N-6-6
  - (1) 45° 13791N-6-6
  - 21.25" –6 SS Braided Line
2. First Pump Supply Line:
  - (2) Straight 10691N-6-6
  - 7" –6 SS Braided Line
3. Second Pump Return Line:
  - (2) 90° 13991N-6-6
  - 22" –6 SS Braided Line
4. High Pressure Steel Line (14" Overall Length)
5. 12" of ½" Rubber Fuel Line (Blue or Black) 821FR-8
6. CP3 Injector Pump (97720662) with (3) Fitting Installed:
  - (2) 12mm to JIC-6 30J061215
  - (1) High Pressure Fitting (Black)
7. ATS Injector Pump Pulley
8. Fuel Rail High Pressure Fitting
  - (a) 03-04 LB7 1000-701-005
  - (b) 01-02 LB7
9. 12mm Seal Washer 1612BP
10. 12mm to JIC-6 Fitting 30J061215
11. 16mm Banjo to JIC-6 Combination Fitting 1000-701-006A
12. 16mm Banjo Seal 97250485
13. ATS Pulley Nut
14. (2) ½" Barbed to JIC-6 Female Fittings 1000-701-004
15. JIC-6 Male Tee 6JTX
16. ATS GM Twin CP3 Pump Bracket
17. ATS Twin CP3 Electronics
18. Large Backside Idler Pulley with two washers 3C3Z-8678-BB

19. Serpentine Belt K061360

20. ATS Alternator Button Head Screw 4248-701-021

21. Hardware Kit:

- (2) M10X1.5X65 Hex Screw
- (1) M10X1.5X80 Hex Screw
- (3) M10 Flat Washers
- (3) M8X1.25X50 Socket Cap Screw
- (3) M8 Flat Washers
- (3) M8X1.25 Flange Nuts