



Installation Manual v1.1:
ATS [Twin CP3 Kit](#)
2002-2004 GM LB7 Duramax

Please read all instructions before installing the ATS Twin CP3 Kit

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.

Thank you for purchasing the ATS Twin CP3 Kit. The picture below shows all the components included in the kit. Two rail fittings (8a. and 8b.) are shown in the picture. The 2001-2002 LB7 fuel rail requires fitting 8a. and the 2003-2004 LB7 fuel rail requires fitting 8b. 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.

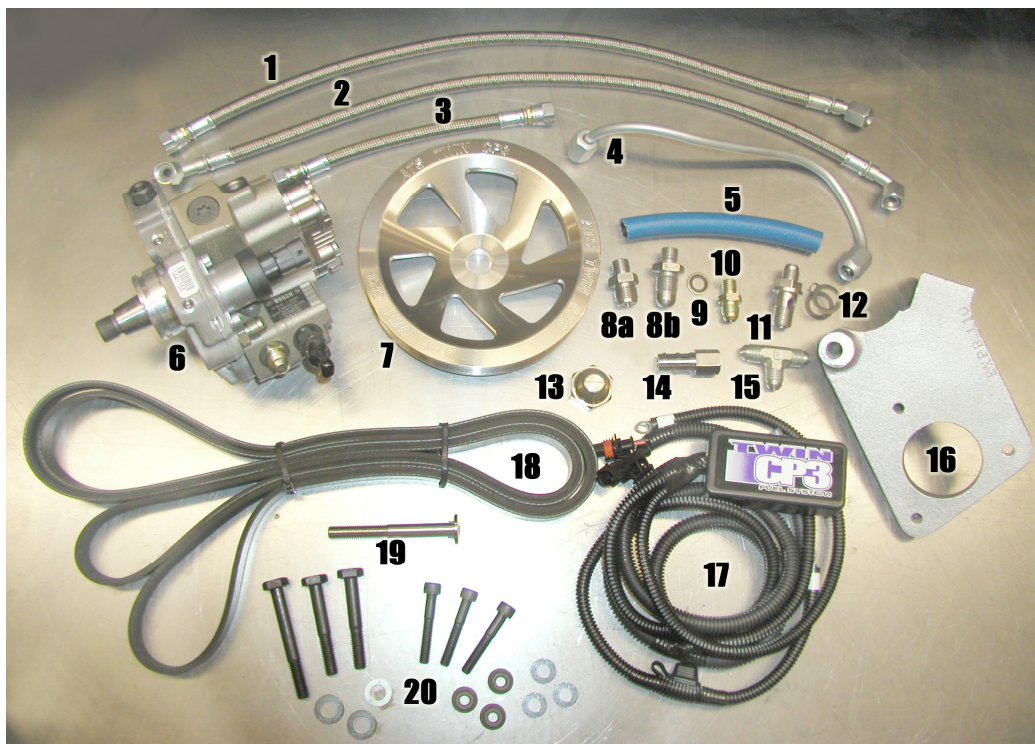


Figure 1: LB7 Twin CP3 Kit

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 2002-2004 model, but the idler pulley locations are accurate.

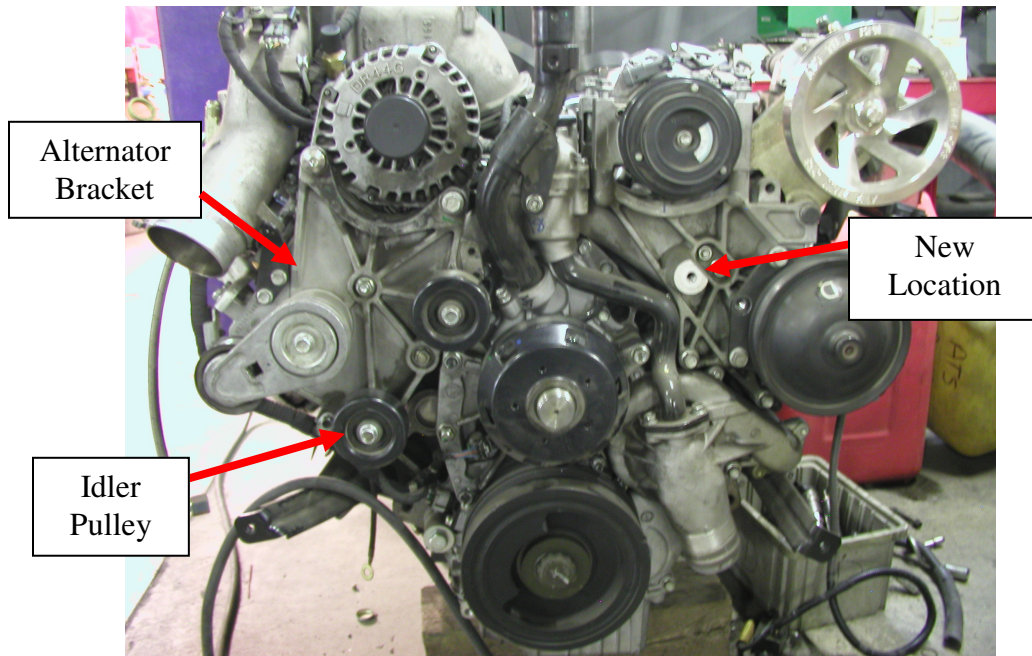


Figure 2: Relocate Idler Pulley

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

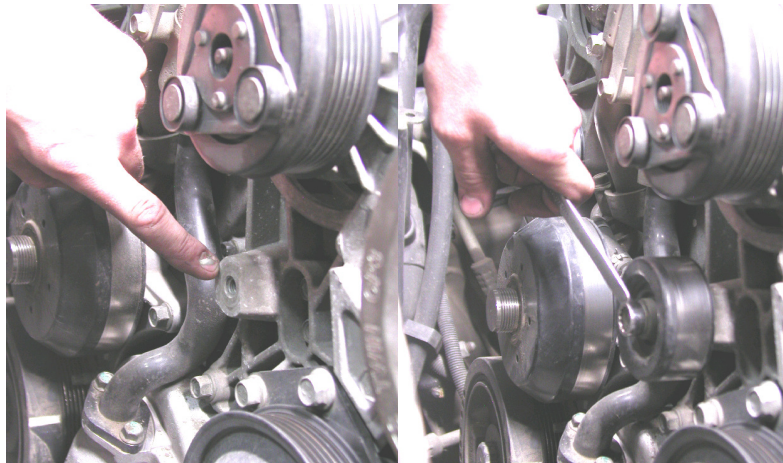


Figure 3: Idler Pulley Installed in New Location

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.

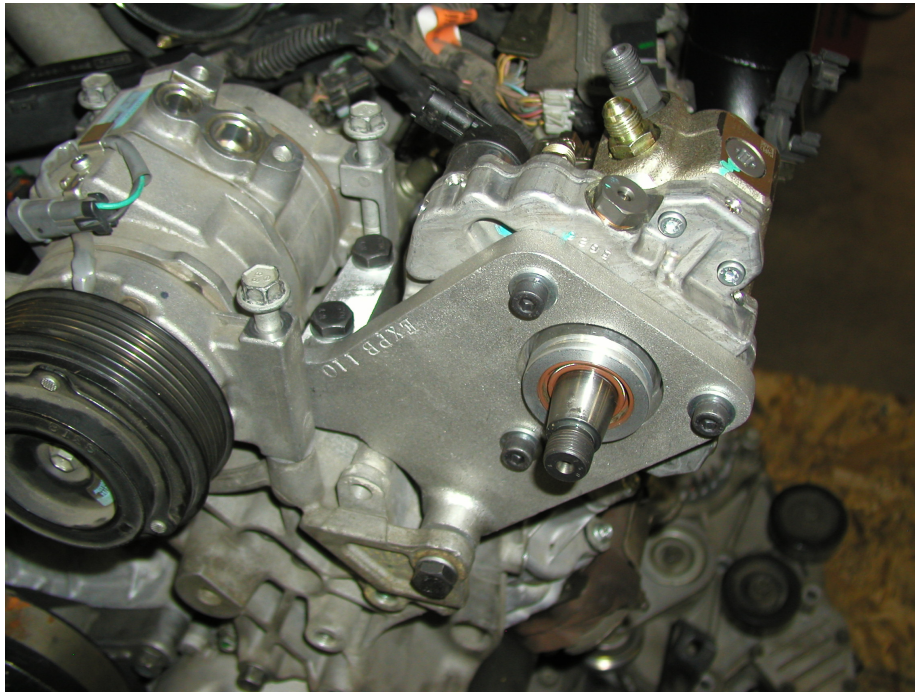


Figure 4: Pump Mounted On Bracket

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.

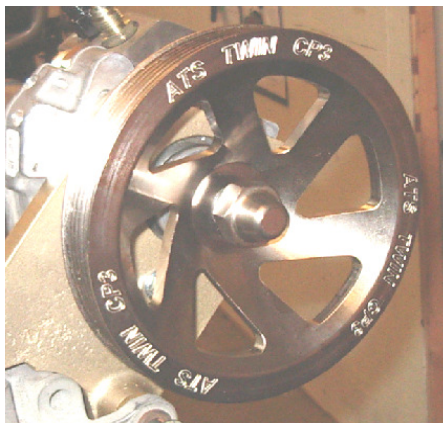


Figure 5: Pulley Mounted on Pump

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.

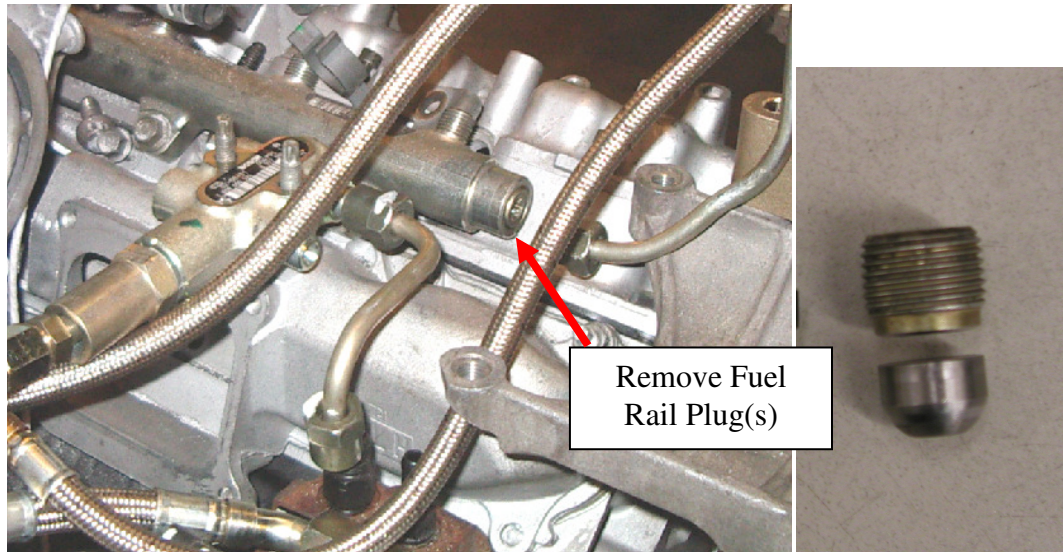


Figure 6: Rail Plug Location and Rail Plugs

9. Install the appropriate supplied fuel rail fitting into the fuel rail.

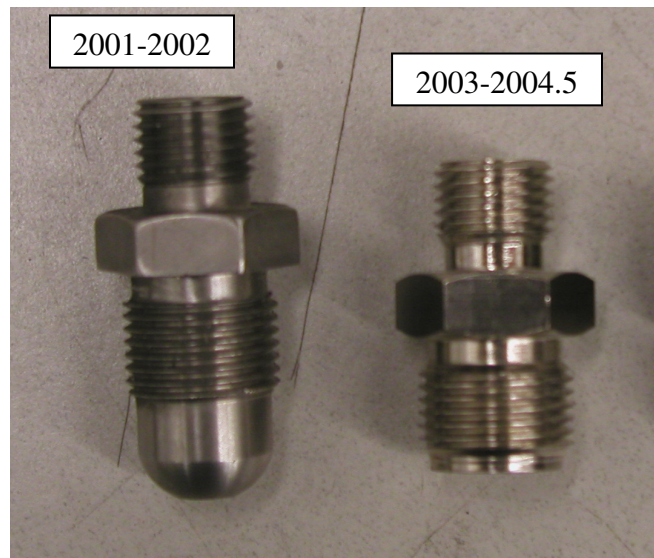


Figure 7: Fuel Rail Fittings

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.

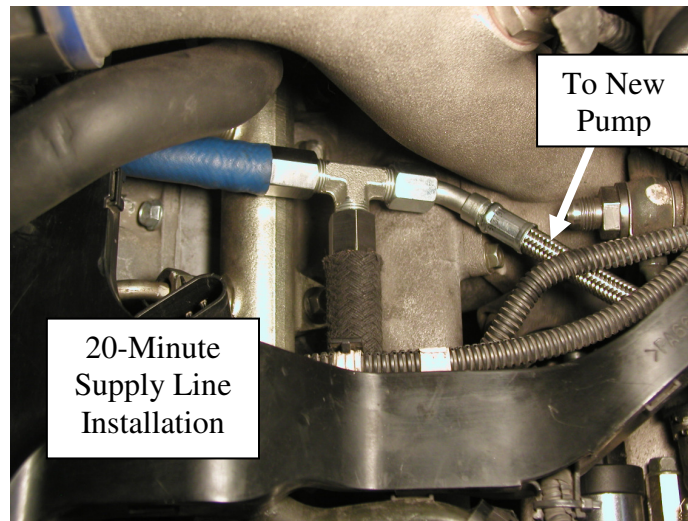


Figure 8: 20-Minute Fuel Supply Connection

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

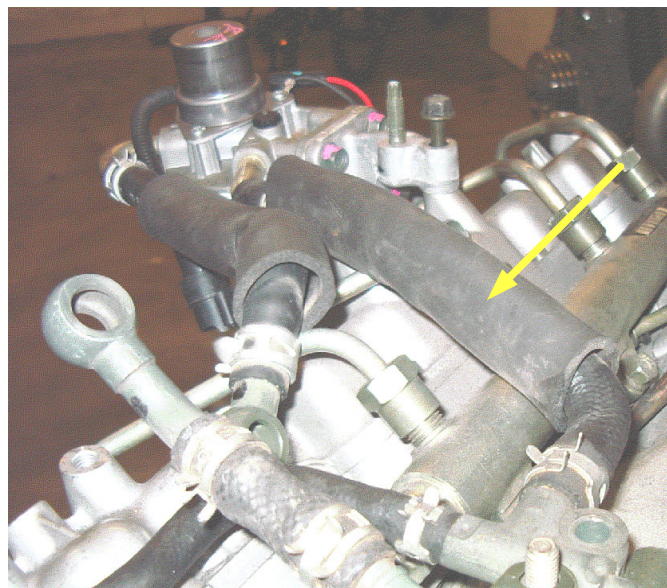


Figure 9: Factory Fuel Supply Line

11. Drain engine coolant.

12. Remove the thermostat housing.

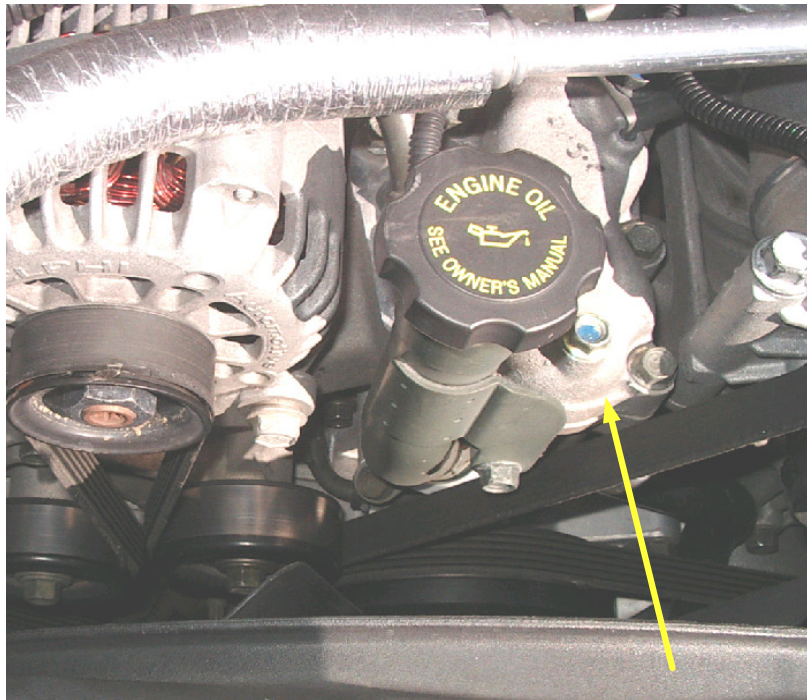


Figure 10: Thermostat Housing

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

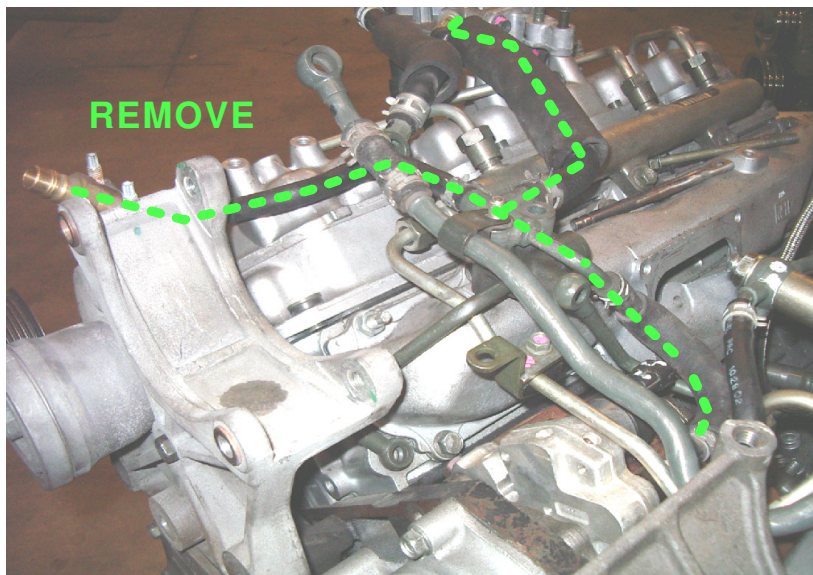


Figure 11: Factory Supply Line Assembly

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

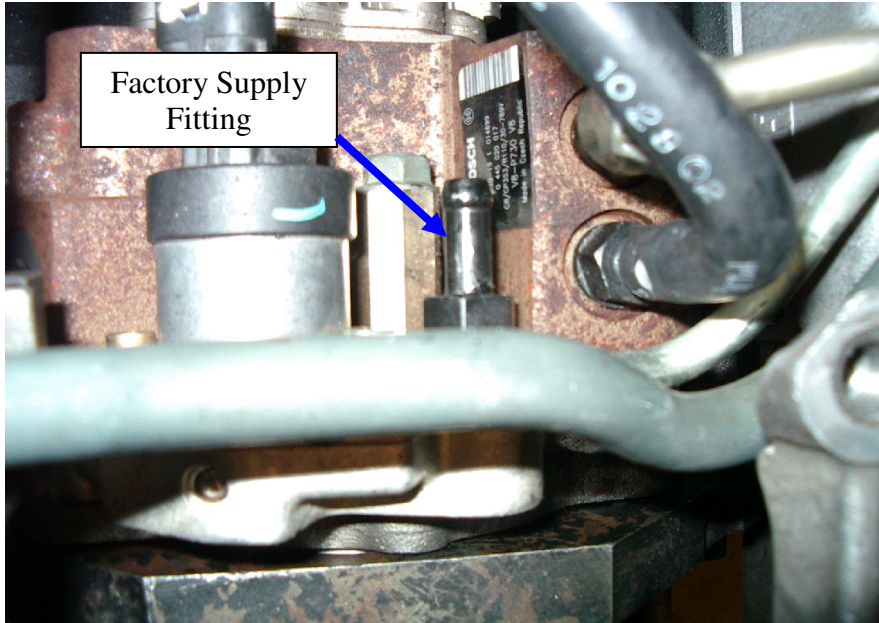


Figure 12: Factory Supply Fitting Location

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

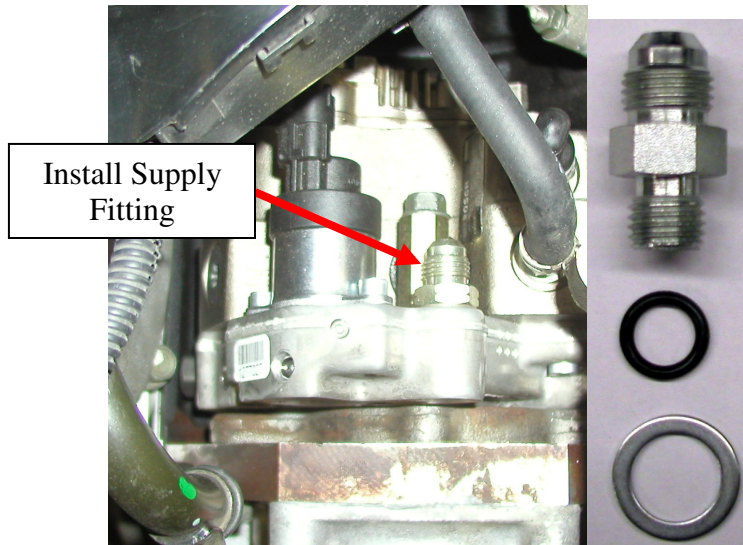


Figure 13: Supply Fitting for Factory Pump

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

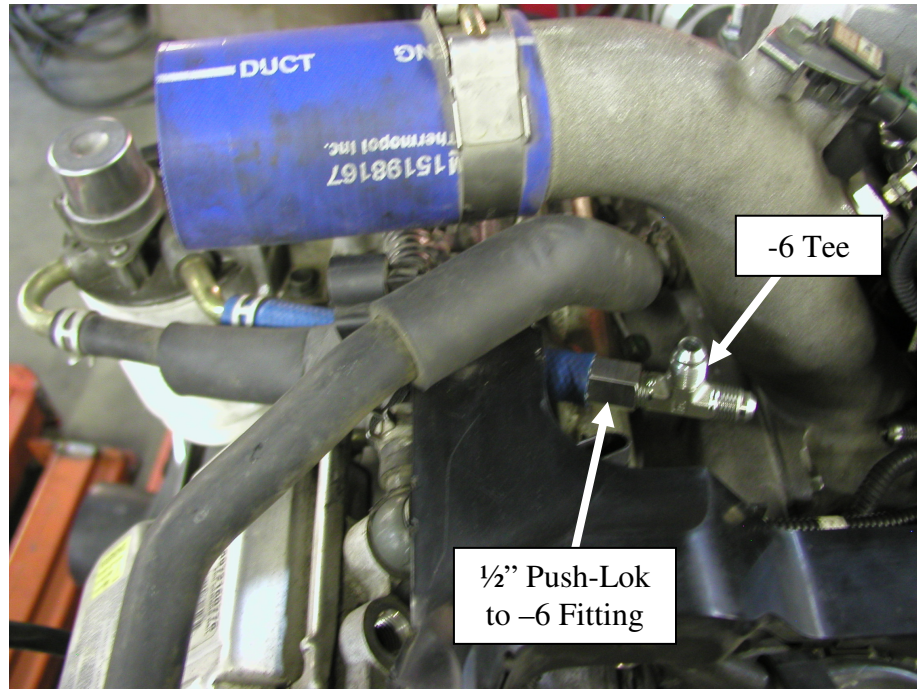


Figure 14: Supply Line and -6 Tee

17. 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**).

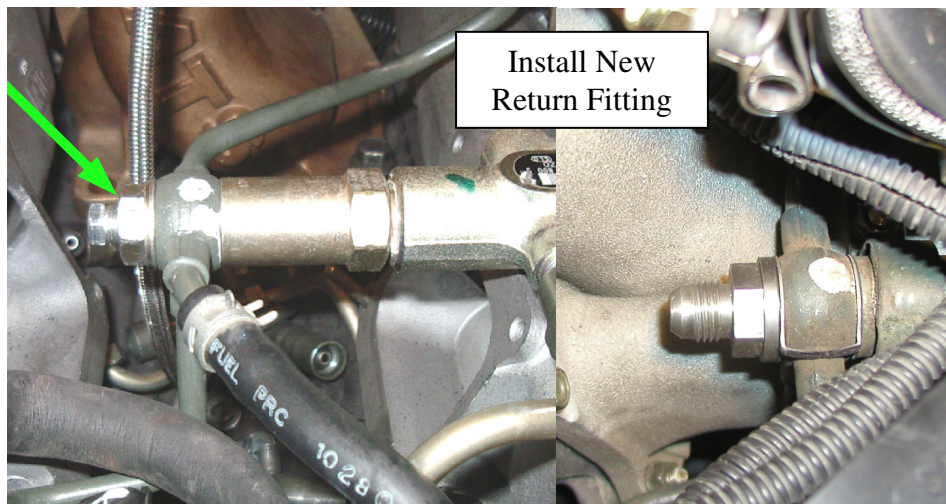


Figure 15: Return Fitting Location

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.

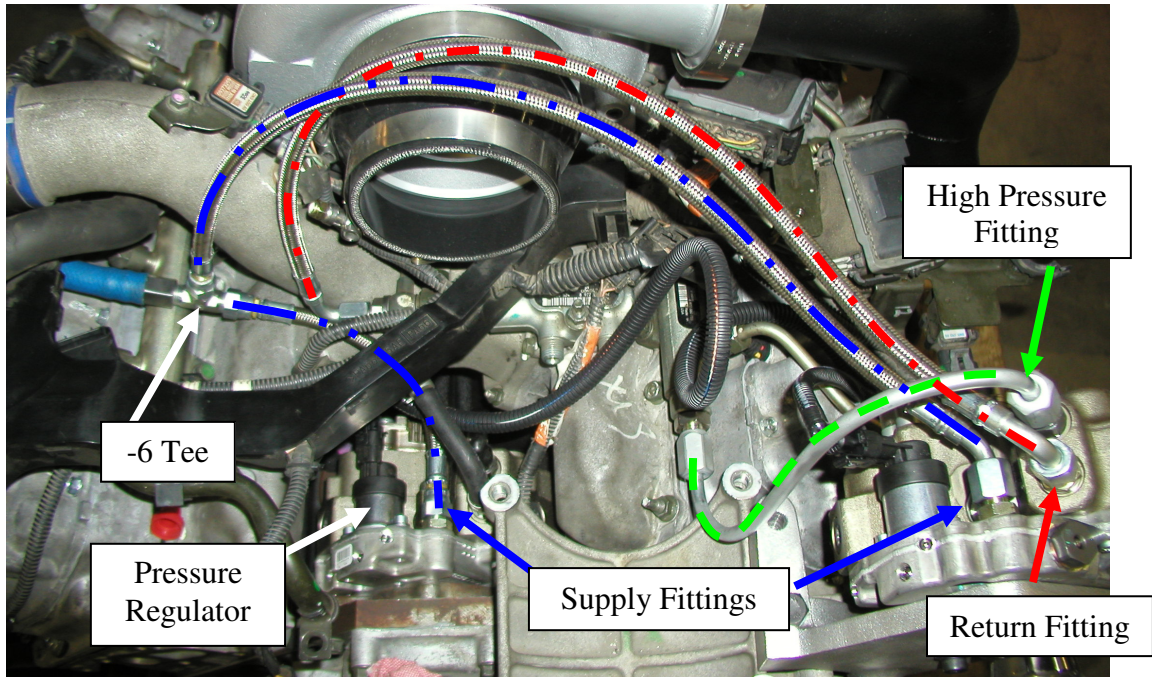


Figure 16: Fuel Line Routing

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 1st CP3 pump. Plug remaining male harness into 2nd 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.

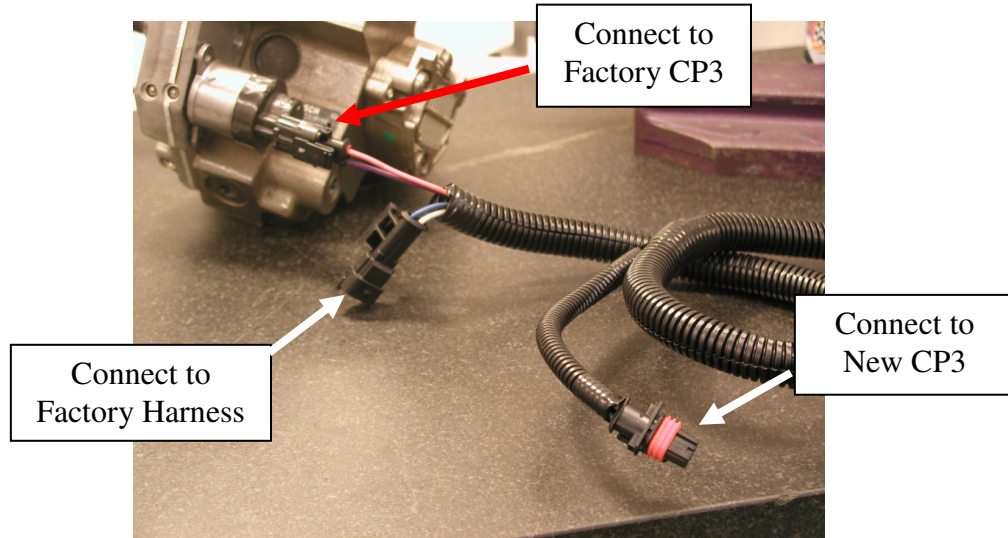


Figure 16: Control Box Location

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.

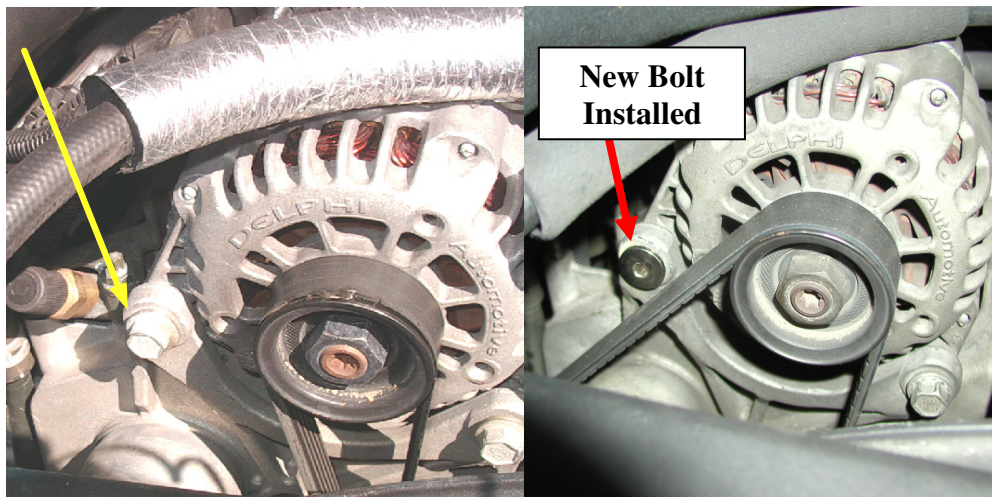


Figure 17: Alternator Bolt Installation

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

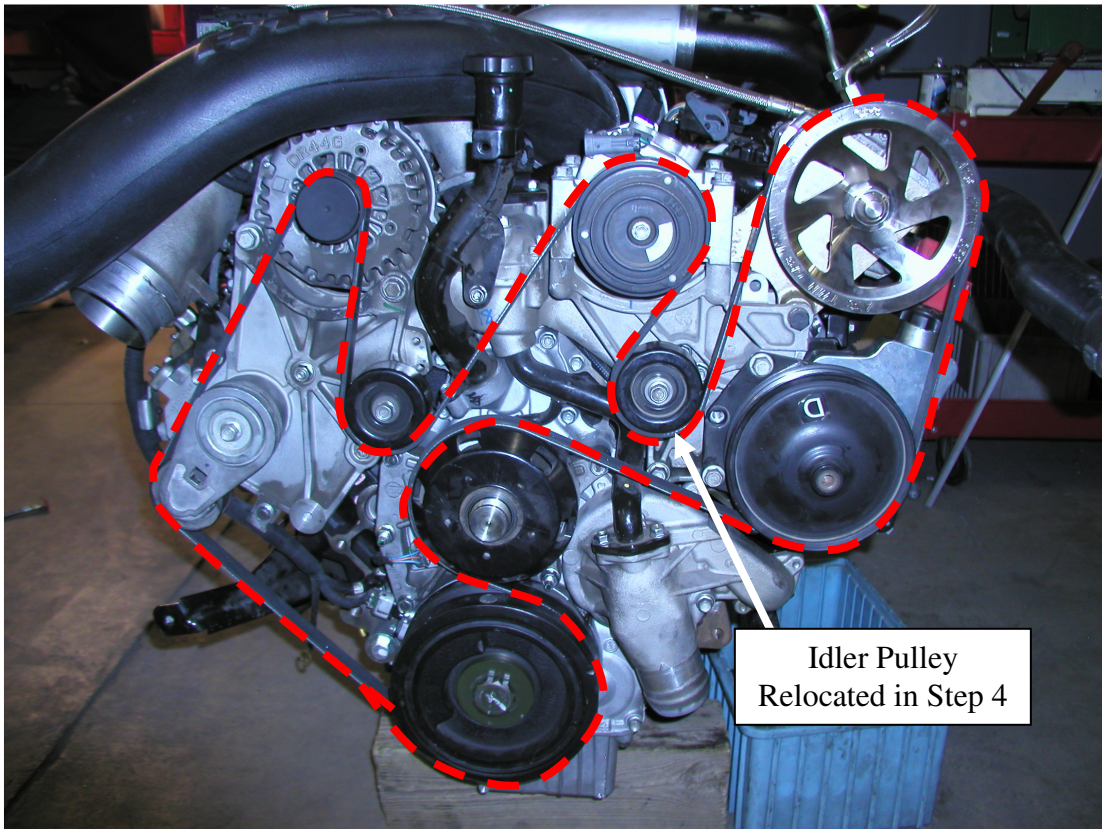


Figure 19: Serpentine Belt Routing

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.

Bill of Materials

1. Steel Braided Second Pump Supply Line 701-023-4248
2. Steel Braided First Pump Supply Line 701-024-4248
3. Steel Braided Second Pump Return Line 701-025-4248
4. High Pressure Steel Line 701-011-4248
5. 12" of ½" Rubber Fuel Line (Blue or Black) 821FR-8
6. Twin CP3 Injector Pump 701-030-4248
 - (1) Injector Pump 97720662
 - (2) 12mm to JIC-6 7400-6-12
7. ATS Injector Pump Pulley 701-014-4248
8. Fuel Rail High Pressure Fitting
 - (a) 03-04 LB7 701-005-1000
 - (b) 01-02 LB7 701-005-4248
9. Obsolete with revision v1.2
10. 12mm to JIC-6 Fitting 7400-6-12
11. 16mm Banjo to JIC-6 Combination Fitting 701-006-1000
12. 16mm Banjo Seal 97250485
13. ATS Pulley Nut 701-017-1000
14. (2) ½" Barbed to JIC-6 Female Fittings 701-004-1000
15. JIC-6 Male Tee 6JTX
16. ATS GM Twin CP3 Pump Bracket 701-013-4248
17. ATS Twin CP3 Electronics 701-019-4248
18. Serpentine Belt 701-033-4248
19. ATS Alternator Button Head Screw 701-021-4248

20. Hardware Kit: 701-001-4248

- (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

Not Pictured:

21. Large Backside Idler Pulley with two washers 3C3Z-8678-BB

22. Instruction Folder

- (1) Purple ATS Folder
- (1) Instruction Manual 701-900-4260-INST
- (2) ATS Stickers