



Installation Manual v1.9: Twin
CP3 Fuel Injection Pump
2003-2007 5.9L Dodge

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.

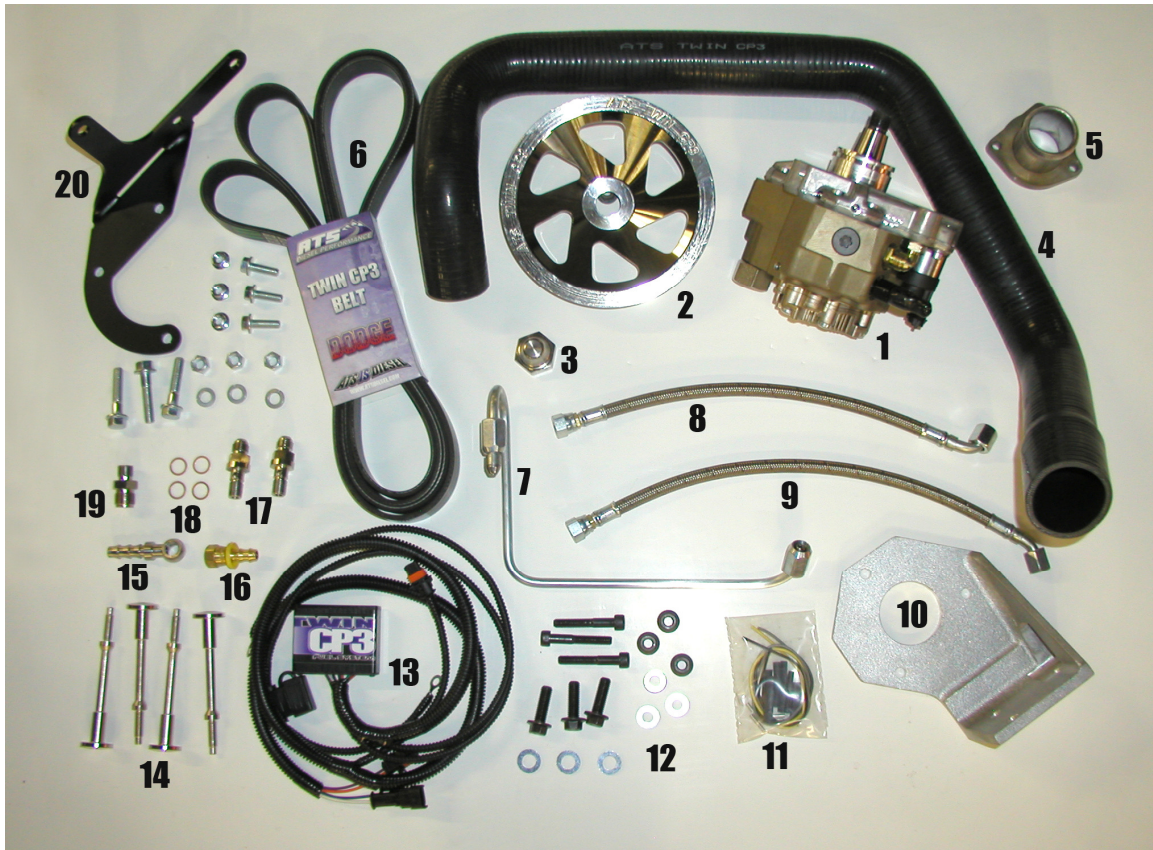


Figure 1: Dodge Twin CP3 Kit Contents

1. Before beginning 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. The high-pressure fuel line (#7 Figure 1) will be different than pictured. The

design of the high-pressure fuel line was changed to allow more flex in the system and to ease installation.

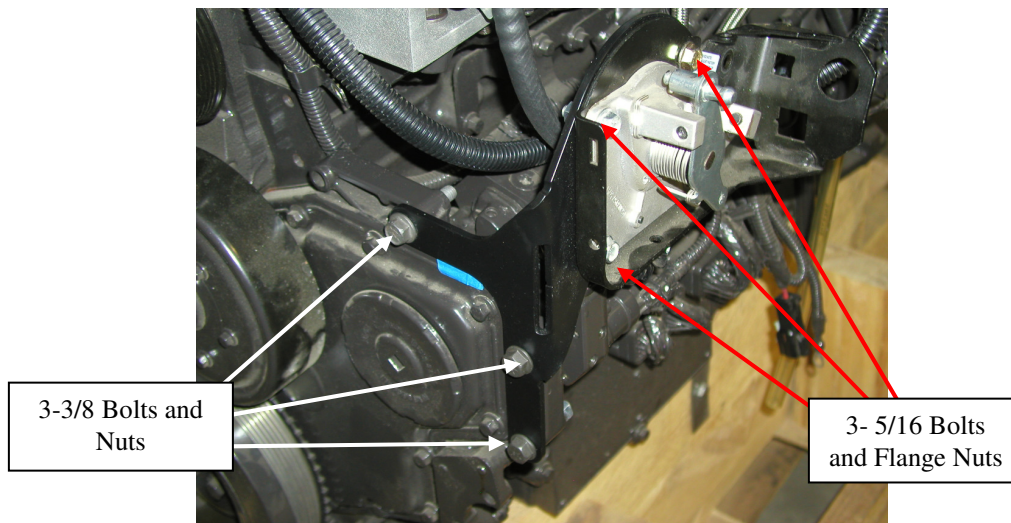
2. Disconnect the (-) negative battery terminals.
3. Drain coolant from radiator and remove the top radiator hose.
4. Remove the factory installed water outlet by removing three bolts; discard outlet.
5. Remove factory installed serpentine belt; discard belt.
6. Install CP3 bracket on front driver's side of the head with the three supplied M10 X 1.5 bolts and 10mm flat washers. Use a small portion of thread locking compound on the three M10 bolts. Tighten the three bolts to **35 ft-lbs**.

2003-2004.5 Vehicles: The TPS sensor and bracket will have to be removed to make room for the new CP3 pump. The sensor will have to be relocated using the bracket and hardware supplied (#21, Figure 1).

TPS1. The TPS assembly is located on the driver side of the engine at the front of the intake manifold. Remove the TPS assembly from the bracket and remove the bracket from the intake manifold. Discard the bracket. On 2004 models the fan shroud bracket will have to be notched to make room for the TPS bracket.

TPS2. Before proceeding with the installation of the new TPS bracket, install the second injection pump by continuing with step 7 below. **Once the second pump is installed and all the lines are connected, continue to step TPS3.** Using this order will make the pump installation easier. The new TPS bracket will limit access to the factory CP3 injection pump, so finish installing the rest of the kit before installing the bracket.

TPS3. Now install the new TPS bracket supplied in the Twin CP3 TPS kit. Use the supplied hardware (3 – 3/8 bolts and nuts) and mount the bracket as shown below.



TPS4. Once the bracket is installed, use the supplied fasteners to mount the TPS assembly to the new bracket and reinstall the cover.

7. If the pressure regulator was removed for shipping reinstall it now. Do not over tighten the three bolts that hold the pressure regulator into the pump. Tighten the three torx bolts to **48 in-lbs or 4 ft-lbs**.
8. Install pump on the bracket with three 8mm hex drive socket cap bolts, three 8mm washers and three 8mm flange nuts. Orient the pump so the fittings point down and out as shown in Figure 2 below.

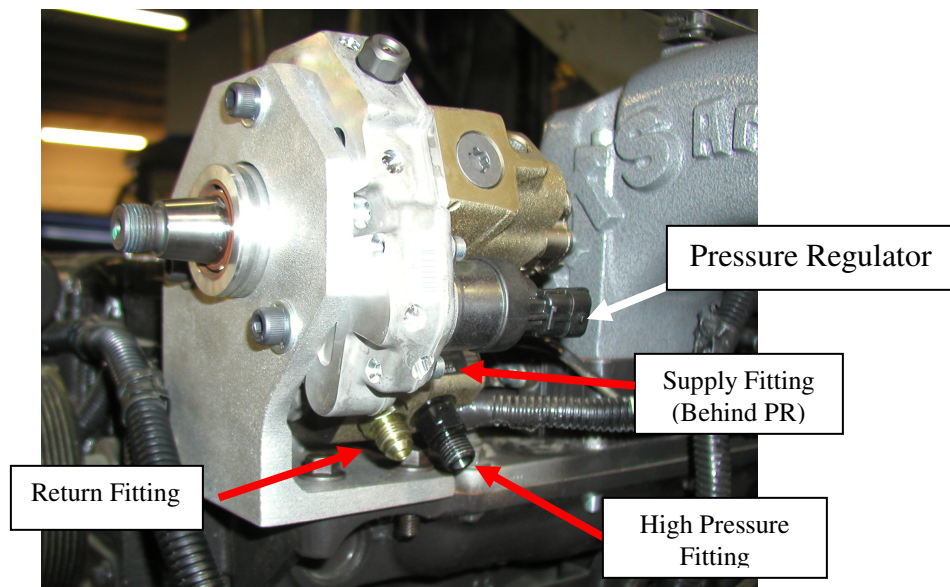


Figure 2: Pump Orientation

9. Install pump pulley and nut. Torque the pulley nut to **52 ft-lbs**.
10. Install the supplied straight water outlet and the black radiator hose supplied in the kit using the original hose clamps, Figure 3.



Intake
Manifold

Figure 3: ATS Radiator Hose

11. If installing the Twin CP3 kit on a 2006 or later vehicle, the valve cover bolts will have to be replaced with the four button head bolts provided in the kit, (#14 Figure 1). The factory valve cover bolts will wear a hole in the ATS radiator hose.
12. Remove the fuel rail pressure sensor. Located in the first port on the top of the fuel rail. **Do not unplug the sensor without noting the plug orientation.** Use the supplied extension harness to add additional length to the rail pressure sensor harness.

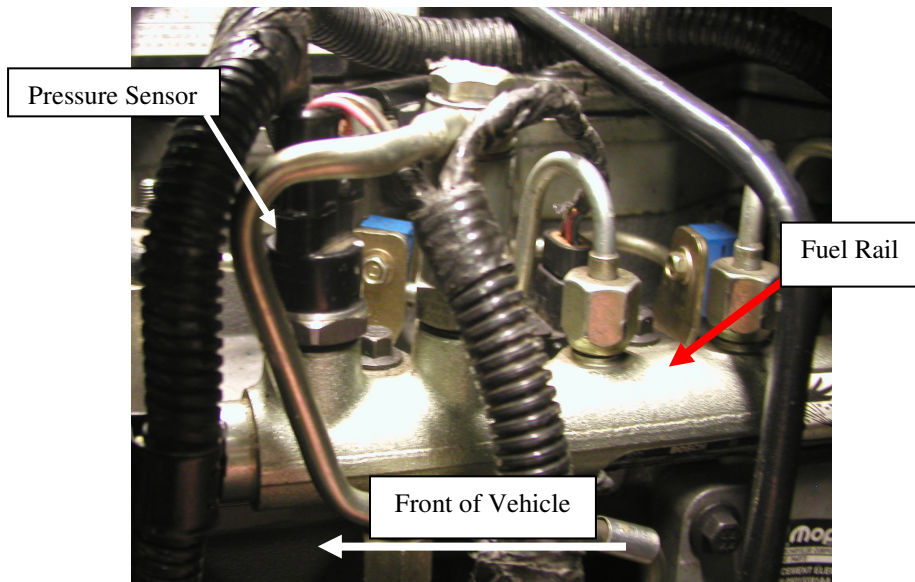


Figure 4: Pressure Sensor Location

13. Some aftermarket programmers connect to the pressure sensor and the aftermarket connectors can be reversed. Reversing the sensor connector will cause the system to malfunction. If the connector must be unplugged make sure the connector clip is on the side of the sensor with the ramp and not the square key when reconnecting.

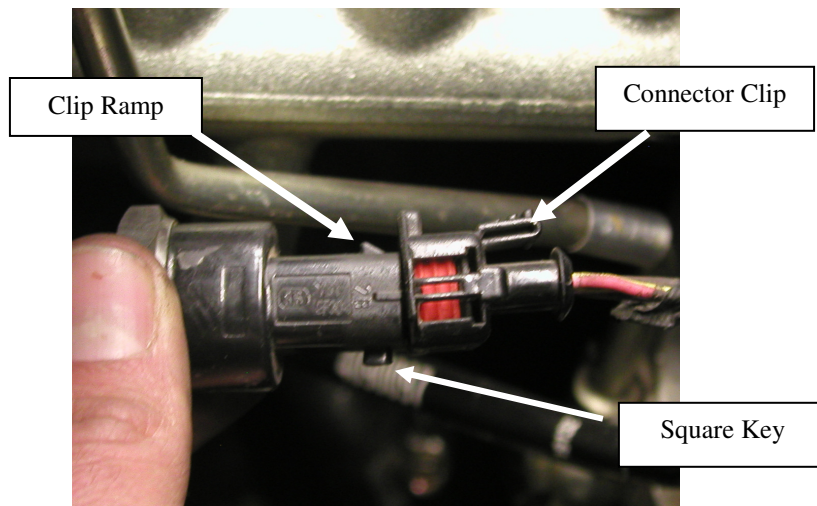


Figure 5: Correct Pressure Sensor Connector Orientation

14. The new pump comes with a fitting already installed on the rear to accept the pressure sensor. Place a small amount of grease (Polylube, Transjel or equivalent) on the sealing surface of the pressure sensor. Thread the sensor into this location, (Figure 6). Lightly tighten the sensor with a 1-1/16" wrench. Then, using a deep socket and a backing wrench, torque the pressure sensor to **80 ft-lbs**. **If backing wrench is not used, it is possible to strip the threads out of the CP3 pump. ATS is not responsible for replacing the pump if the threads are damaged.**

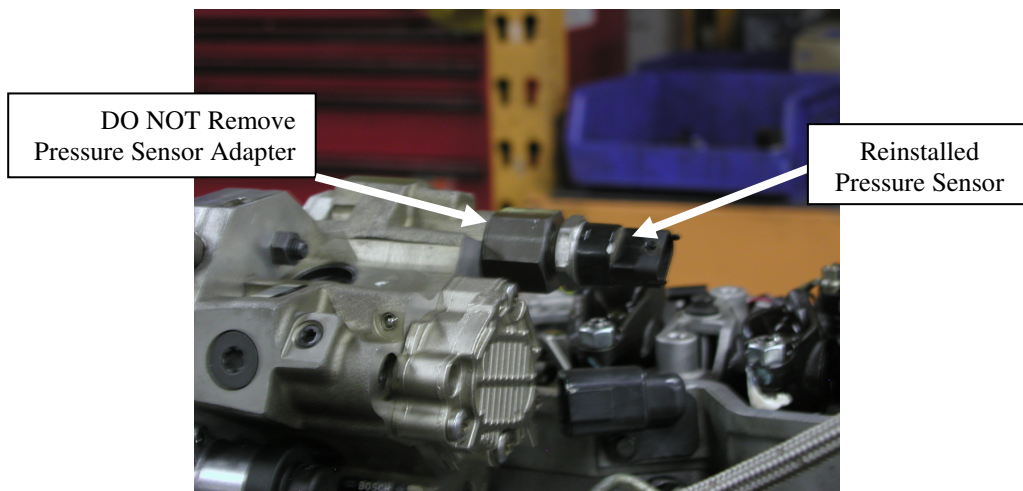


Figure 6: Pressure Sensor Reinstalled in Pump Fitting

NOTE: Do not remove the pressure sensor adapter. If the tamper evident paint on the pressure sensor adapter is broken, ATS will NOT warranty the pump.

15. Reconnect the pressure sensor wires to the harness by splicing in about 6 inches of the supplied wire using butt connectors and heat shrink supplied with the kit. Be sure to splice the wires correctly and check to make sure the colors match.

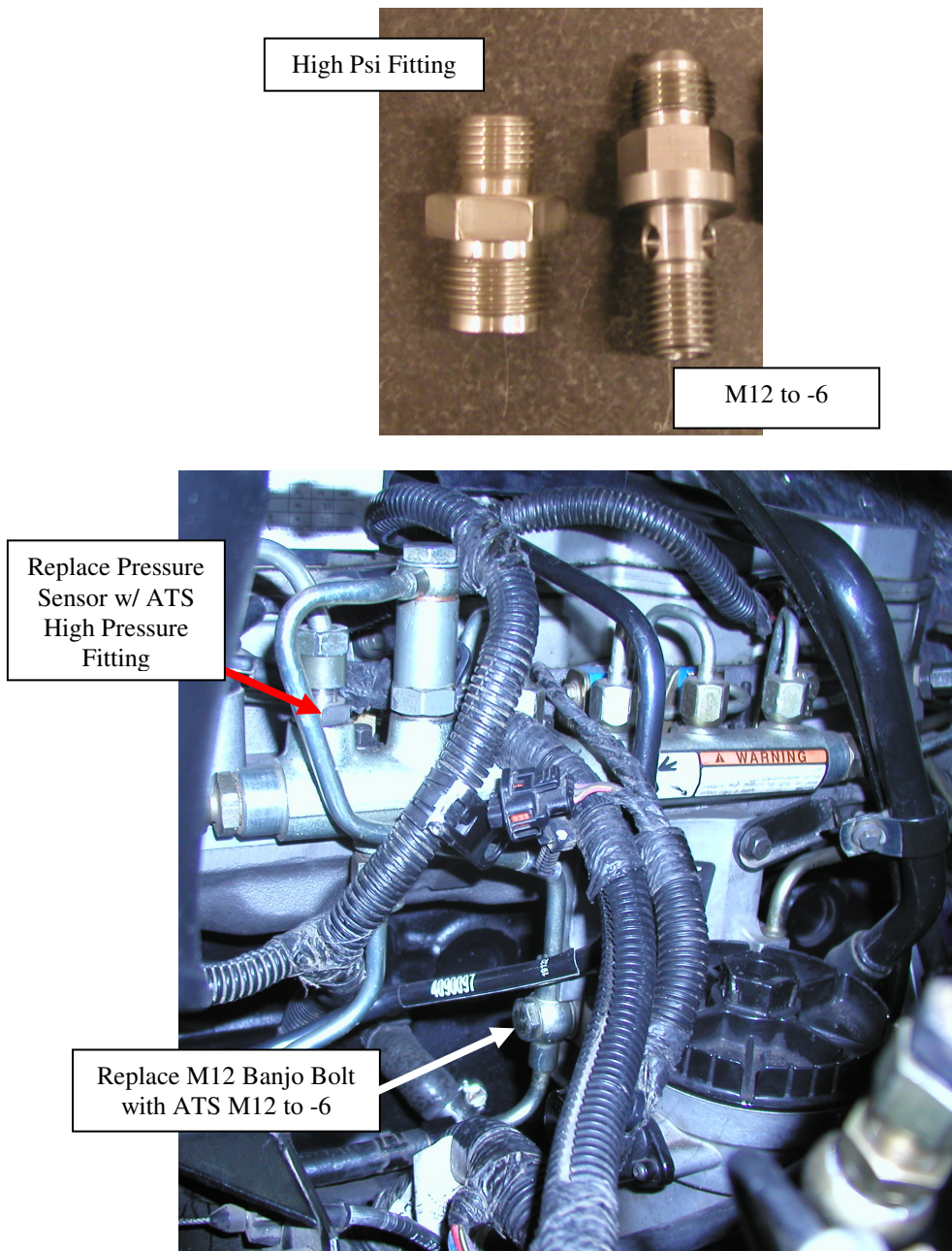


Figure 7: Fitting Locations

16. Install the ATS high pressure fitting (#19, Figure 1) into the open port in the fuel rail. Note: apply a small amount of grease (polylube or transjel) to the sealing surface on the bottom of the high pressure fitting prior to installation.
17. Install the high-pressure steel fuel line (#7, Figure 1) from black fitting on the pump to the new fitting that replaced the pressure switch in the rail.
18. Remove the banjo bolt from the return line on the fuel filter housing (Figure 7) and install the one of the two ATS M12 Banjo to -6 fittings in this location.

19. Install the 14" steel braided -6 line from the pump return to the new banjo fitting, Figure 8.

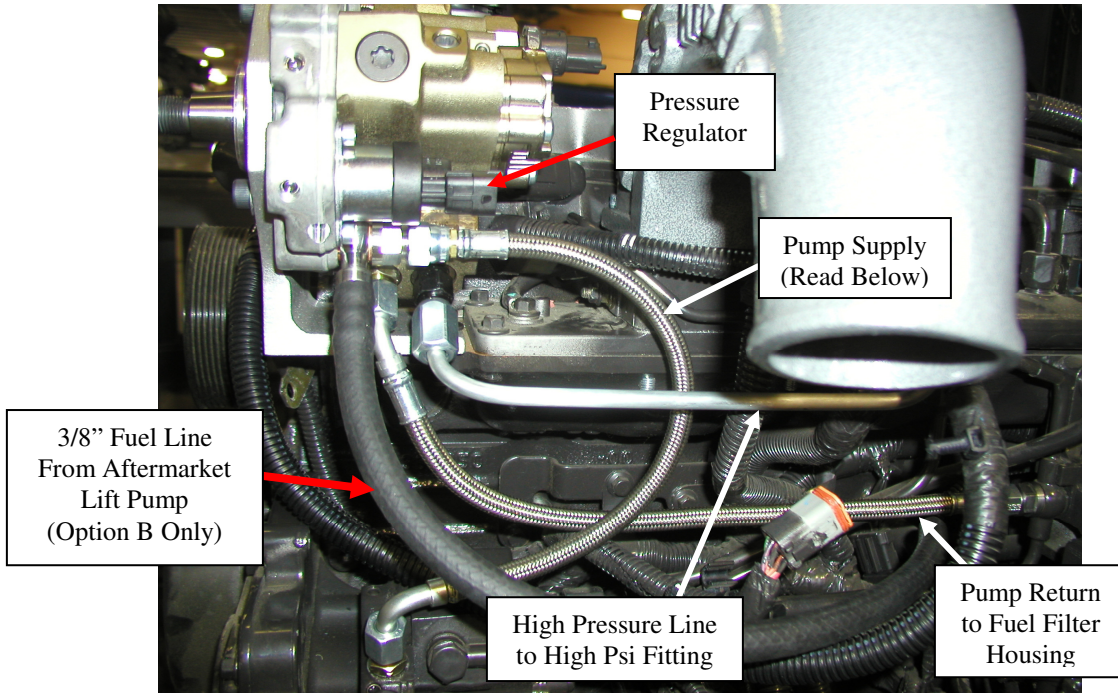


Figure 8: Fuel Lines Installed (Option "B" below)

20. There are three 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 a FASS (or equivalent) aftermarket lift pump and filter (performance applications).
- To get maximum results from the Twin CP3 setup, install two (FASS or equivalent) lift pumps and a second pickup tube kit available from ATS.

Supplies are included with the ATS Dodge Twin CP3 kit to connect the fuel lines for all three options. The extra pickup tube and lift pumps are not included in this kit.

Option A:

A1. If both pumps are going to be supplied using the factory lift pump, then remove the banjo bolt from the factory CP3 injection pump feed line at the pump, Figure 9.

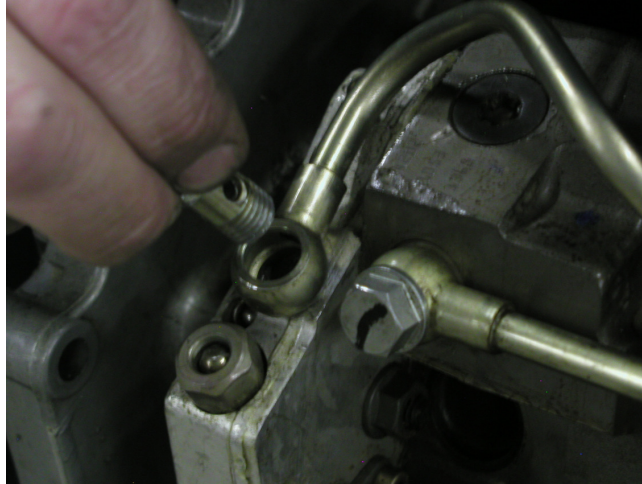


Figure 9: Remove the Banjo Bolt From Existing Pump

A2. Install the supplied 12mm banjo to JIC-6 fitting using two of the supplied banjo sealing washers.

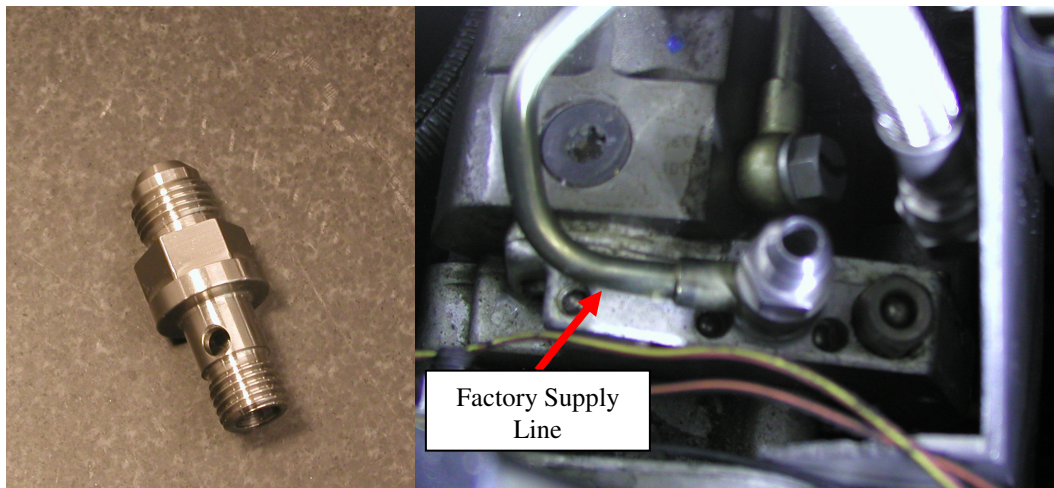


Figure 10: ATS M12 to JIC-6 Installed

A6. Connect the 11.5 inch –6 steel-braided line from the ATS 12mm banjo / JIC-6 fitting to the supply port located next to the pressure regulator on the second pump as shown in Figure 8.

Option B:

B1. If the twin CP3 pumps are being supplied by a single FASS or equivalent lift pump, then connect the 3/8" line from the upgraded lift pump to the twin CP3 using the supplied barbed 12mm banjo fitting.

B2. Remove the banjo bolt as shown in Figure 9. The silver -6 fitting in the supply port of the second CP3 pump must be removed and installed into the factory CP3 supply port.

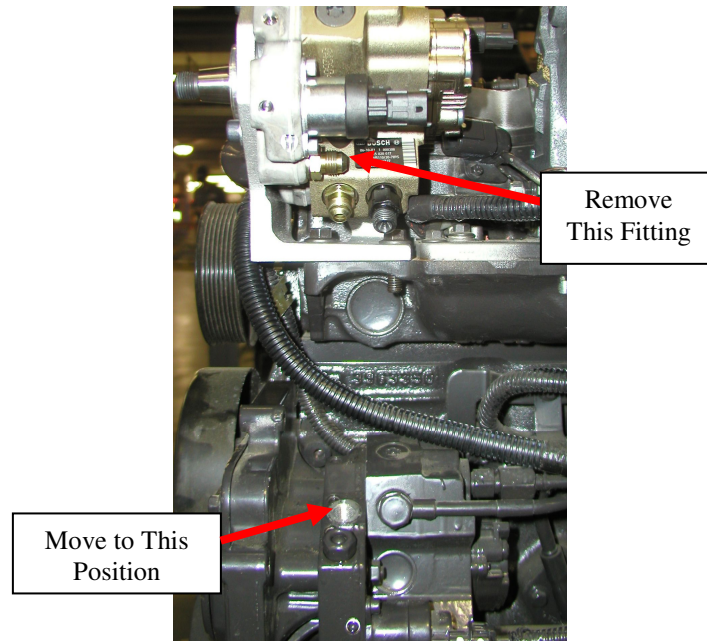


Figure 11: Relocate Supply Fitting

B3. Install the M12 to -6 fitting and the 12mm barbed banjo as shown in Figure 12 using two of the supplied copper sealing washers.

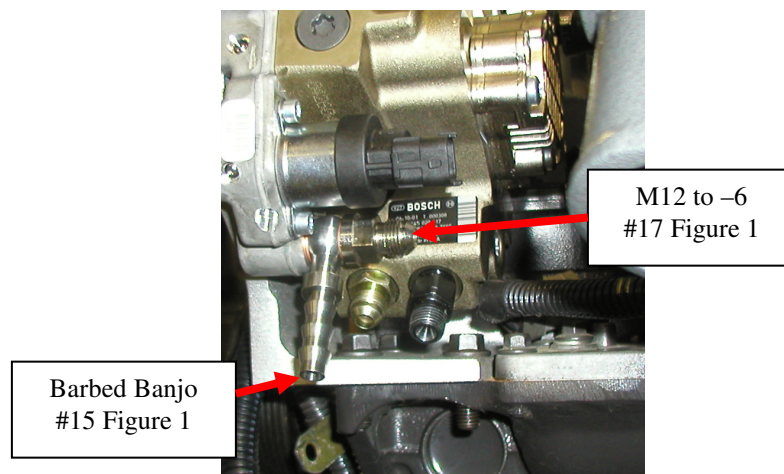


Figure 12: Single Aftermarket Lift Pump Supply

B4. Install the 11.5" supply line (#8 Figure 1) from the M12 to -6 fitting to the supply on the factory pump as shown in Figure 8.

B5. If a FASS or equivalent 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.

Option C:

C1. If two FASS or equivalent aftermarket lift pumps will be supplying the CP3 pumps, then connect the supply lines from the lift pump directly to each CP3 supply port using the hardware supplied with the lift pump kits as shown in Figure 13. The ATS Dodge Twin CP3 kit includes one -6 female barbed fitting (#16 Figure 1) for option C.

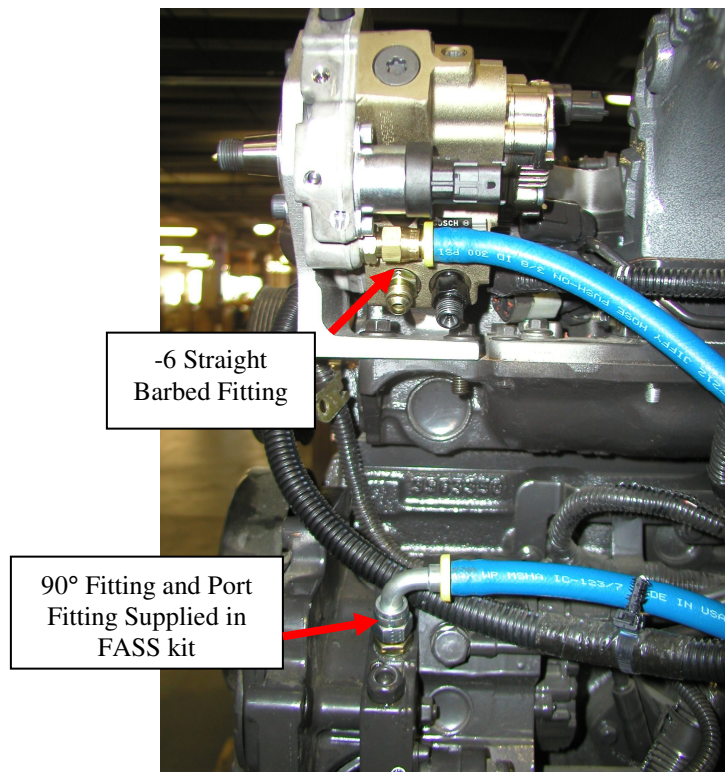


Figure 13: Twin Lift Pumps Supplying Twin CP3 Pumps

21. Unplug original CP3 pump regulator harness from existing pump.
22. Connect the factory harness regulator male connector into the ATS Twin CP3 controller harness and connect the two male connectors into the existing and new CP3 pump regulators.

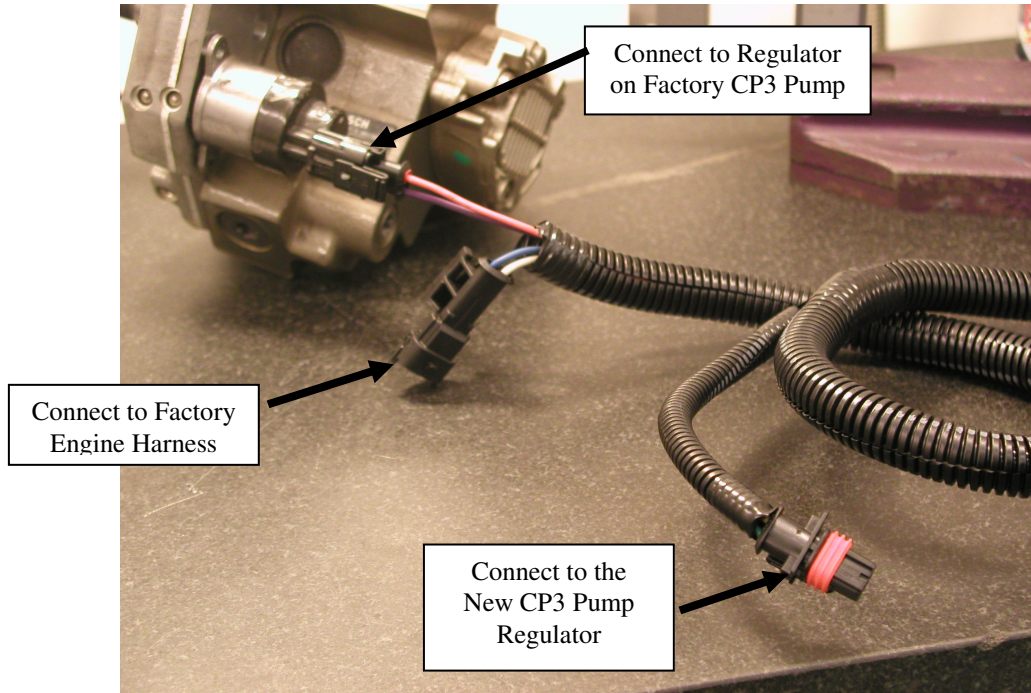


Figure 14: Twin CP3 Harness Regulator Connections

23. Using the Velcro provided, attach the controller to the top of the fuse box.



Figure 15: Controller Location

24. Connect the black ground lead to the negative (-) terminal on the battery.

25. Using the add-a-fuse circuit, add the power connection to either fuse location 27 or 50 (for 03-05) and in the fuse box under the hood. Trim the wire as necessary and use the butt connector to attach the power wire. These power connections ensure the electronics have power with the key in the on position and during cranking to avoid high rail pressures on startup. **Make sure a 7.5 Amp or 10 Amp fuse is in the fuse holder.**

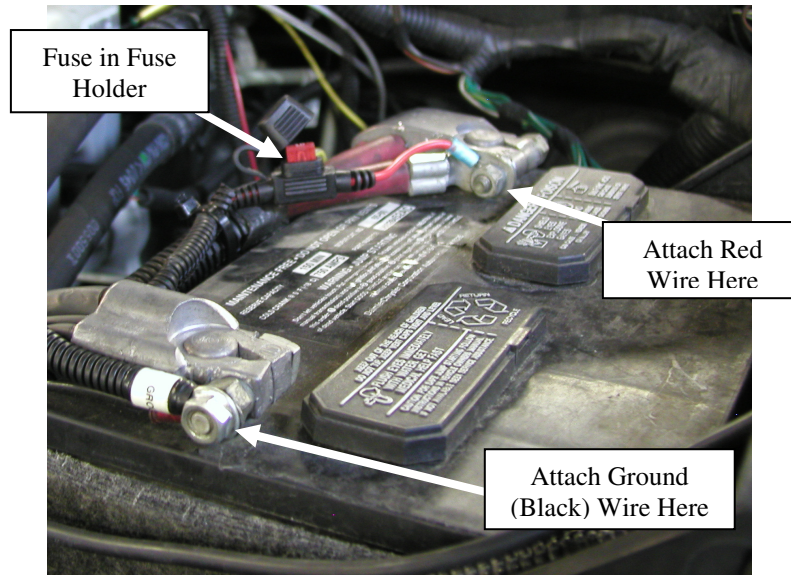


Figure 16: Power and Ground Connections

26. Install the ATS accessory belt as shown in Figure 17.

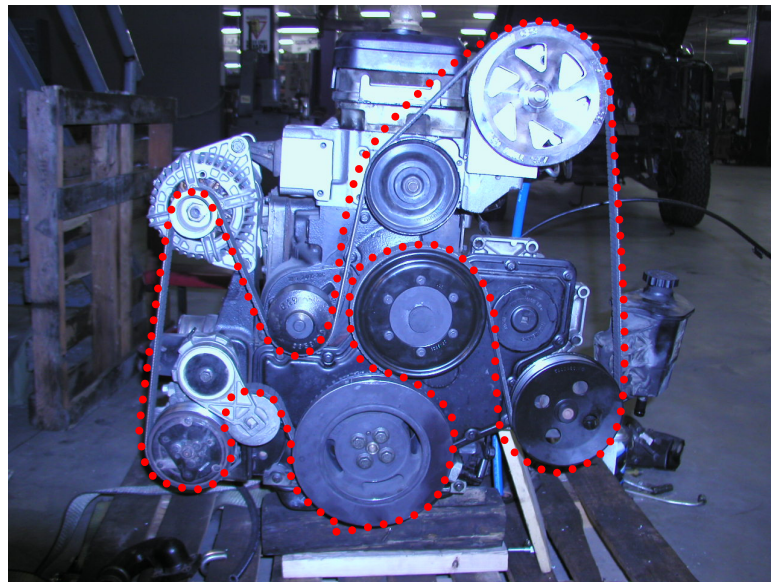


Figure 17: Belt Routing

27. Reconnect the (-) negative battery terminals.
28. Refill engine coolant.

29. If previously removed, reinstall the intake manifold and any other components removed during installation to gain access inside the engine compartment.
30. Turn key to the on position without starting the vehicle. Check for fuel leaks. If no leaks are present then start vehicle. Check for fuel leaks at idle. 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 the fuel rail pressure sensor. If no leaks are found, then the installation is complete.

Bill of Materials

1. Dodge Twin CP3 Injection Pump 701-030-2272
 - (1) Pressure Sensor Adapter 701-009-1000
 - (2) 12mm To JIC-6 Fitting 7400-6-12
 - (1) Fuel Injection Pump 97720662
2. Twin CP3 Pulley 701-014-2272
3. Pulley Nut 701-017-1000
4. Twin CP3 Radiator Hose 701-010-2272
5. Straight Water Outlet 701-031-2272
6. 8-Rib Serpentine Belt 701-033-2272
7. High Pressure Steel Fuel Line 701-011-2272
8. Steel Braided Supply Line 701-023-2272
9. Steel Braided Return Line 701-025-2272
10. Twin CP3 Pump Mounting Bracket 701-013-2272
11. Harness Extension Kit 701-032-2272
12. Hardware Kit (Includes #20 Figure 1) 701-001-2272
 - (3) M10 X 1.5 X 30 Flange Bolts
 - (3) M8 X 1.25 X 50 Socket Cap Bolts
 - (3) M8 X 1.25 Flange Nuts
 - (3) 8mm Flat Washers
 - (3) 10mm Flat Washers (not pictured)TPS Bracket Hardware (top left, Figure 1)
 - (3) 3/8-16 X 1.75" Flange Bolts
 - (3) 3/8-16 Hex Nuts
 - (3) 3/8 Lock Washers
 - (3) 5/16-18 X 1" Flange Bolts
 - (3) 5/16-18 Flange Nuts
13. Twin CP3 Control Harness 701-019-2272
14. (4) Slim Valve Cover Bolt (use on 2006-2006.5) 701-020-2308
15. 3/8 Barbed 12mm Banjo Fitting 34982-12-6
16. JIC-6 Female Barbed Fitting 30682-6-6B
17. (2) 12mm Banjo Bolt to JIC-6 Fitting 701-008-1000

18. (4) 12mm Copper Sealing Washers 853009-12

19. High-Pressure Fitting 701-005-1000

20. TPS Relocating Bracket (use on 2003-2004.5 Only) 701-007-2272

Not Pictured:

21. Thread Locking Compound .02oz Tube 91458A56

22. 3/8 Barbed Union 38282-6-6-B

23. Instruction Manual 701-900-2272-INST