



**Installation Manual v1.2:  
CP3 High Pressure Fuel Injection Pump System  
GM- 6.6 Duramax**

**Please read all instructions before installation.**

Thank you for purchasing the CP3 High Pressure Fuel Injection Pump. This manual is to assist you with your installation. If you are installing this system for a customer, *please pass this manual on to your customer* for future reference.

Before starting this installation, check to make sure your kit contains all of the components.

### **Removing the old pump**

Note: Do your best to keep all components as clean as possible.

1. Disconnect the negative battery cables from all batteries.
2. Remove the air duct that runs from the turbo inlet to the air cleaner. *Cover the turbo inlet to keep debris out.*
3. Drain the coolant from the radiator into a clean container so that it can be reused later.
4. Remove the upper fan shroud and fan.
5. Remove the serpentine belt.
6. Remove the bolt that holds the positive battery cable junction box and bracket, place it out of the way.
7. Remove the A/C compressor and the power steering pump. *Do not loosen or disconnect their lines.* Place the A/C compressor and power steering pump aside with their lines attached.
8. Remove the air conditioning/power steering bracket.
9. Remove the oil filler tube.
10. Remove the alternator.
11. Remove the thermostat housing bracket, wiring and fuel test port, and two nuts.
12. Remove the PCV (positive crankcase ventilation) catch tank from the PCV bracket and the bolt below holding lower line and place it out of the way.
13. Remove the alternator bracket.
14. Remove the turbo cooling return line holes clamp and the hose itself.
15. Remove the upper radiator hose at the outlet pipe. Remove the bracket and support it at the valve cover. Place it out of the way.
16. Remove the bolt that holds the wiring support bracket at the thermostat housing.
17. Move the main wiring harness by following these steps:
  - a. Disconnect the fuel pressure regulator connector on the fuel injection pump.
  - b. Disconnect the fuel injection control module connectors.
18. Flip the wire harness and the harness tray towards the back and put it out of the way.
19. Disconnect the heater pipe bolt and temperature sensor wire from the thermostat housing.
20. Remove the air intake pipe.
21. Remove the water crossover assembly.

22. Remove the hose to the turbo water feed line. **IMPORTANT:** Cap all of the open fuel connections with suitable plastic plugs in order to keep debris out.
23. Disconnect all high pressure fuel lines and remove supply pipe and hose at the fuel injection pump and function block.
24. Remove the return fuel hose from the fuel injection pump.
25. Disconnect the y-junction banjo fitting at the junction block.
26. Remove the bolts holding the fuel injection pump (two bolts in front cover and two bolts in the block). **IMPORTANT:** Be careful not to damage any mounting surfaces.
27. Remove the fuel injection pump from the block using two screwdrivers to work the pump from the block towards the rear of the engine while keeping the pump as straight as possible.
28. Remove the fuel injection pump.

### **Installing new fuel injection pump**

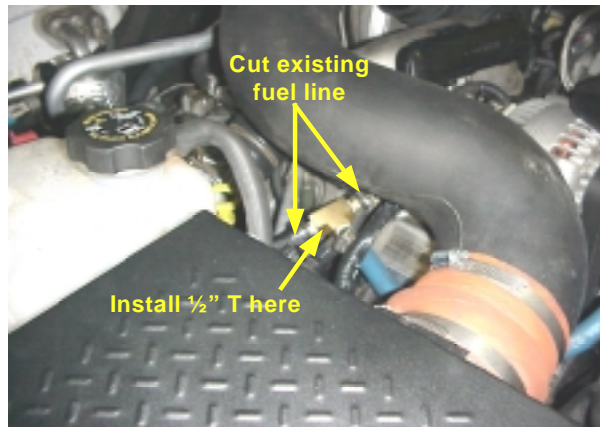
Note: Do your best to keep all components as clean as possible.

1. Position the new fuel injection pump into place.
2. Install the fuel injection pump mounting bolts from the front of the engine front cover. Tighten the fuel injection pump mounting bolts to **15 lb-ft.**
3. Route the two (2) high-pressure lines, see the attached Fuel Line Diagram.
4. Reconnect the fuel return line banjo bolt at the junction block. Tighten the banjo bolt to **11 lb-ft.**
5. Reinstall the fuel return hose and hose clamp to the fuel injection pump.
6. Reinstall the high-pressure lines that run from the injection pump to the junction block. Tighten these high-pressure lines to **32 lb-ft.**
7. Reinstall the fuel pressure sensor connector at the junction block.
8. Reinstall the hose to turbo water feed line.
9. Reinstall the water crossover assembly.
10. Reinstall the air intake pipe.
11. Reinstall the heater pipe using the following procedure:
  - a. Install the new O-ring (lubricated with clean engine oil)
  - b. Install the heater pipe bracket bolt. Tighten the bracket bolt to **15 lb-ft.**
  - c. Install the heater pipe to water crossover bolts. Tighten bolts to **15 lb-ft.**
12. Reconnect the engine wiring harness.
13. Reinstall the upper radiator hose at outlet pipe using the following procedure:
  - a. Install upper radiator hose mounting bolts and brackets. Tighten bolts to **7 lb-ft (90 lb-in).**
  - b. Install the upper radiator hose clamp.
14. Reinstall the turbo cooling hose return and clamp.
15. Reinstall the left idler pulley and bolt.
16. Reinstall the PCV catch tank, hose clamp and bolt to the right front of the engine.
17. Reinstall the thermostat housing bracket, wiring, fuel test port and nuts.
18. Reinstall the alternator.
19. Reinstall a new O-ring to the oil fill tube and lubricate the O-ring with clean engine oil.
20. Reinstall the oil fill tube.
21. Reinstall the air conditioning/power steering bracket and its bolts. Tighten the air conditioning and power steering bracket bolts to **34 lb-ft.**
22. Reinstall the air conditioning compressor.
23. Reinstall the positive battery cable junction box and bolt.
24. Reinstall the serpentine belt.
25. Reinstall the fan blade assembly.
26. Reinstall the upper fan shroud.

27. Mount the auxiliary fuel pump (FASS) to the air conditioning/power steering bracket as shown:



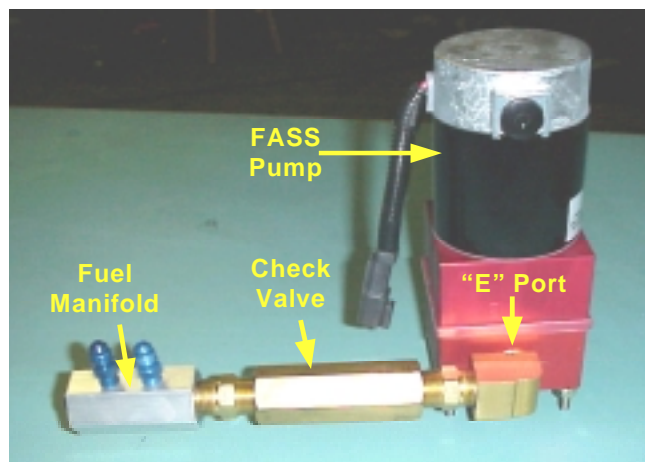
28. Locate the high-pressure line from the FICM (Fuel Injection Control Module), cut it and install the supplied 1/2" T-junction as shown:



Note: See the supplied Fuel Line Diagram for further clarification.

29. Run fuel line from 1/2" T-junction to the port is labeled with a letter "T" on the FASS pump.

30. Install the supplied 90° elbow fitting into the port labeled with the letter "E" on the FASS pump. Install the check valve onto the other end of the 90° elbow. **IMPORTANT:** Mount the check valve so that the direction of flow arrow points towards the fuel manifold/CP3 pump and attach the fuel manifold.

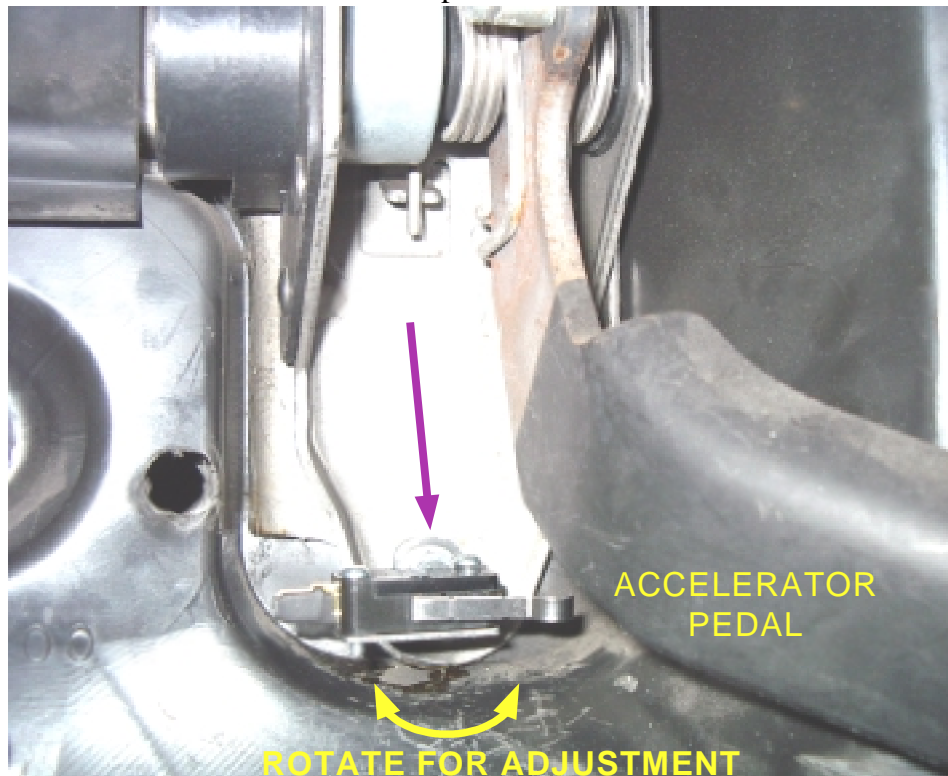


31. Run the braided lines from the CP3 pump to the fuel manifold.

32. Refill the coolant.
33. Reinstall the air intake duct between the air cleaner and the turbo inlet housing.
34. Replace all of the hold down ties.
35. Wiring: Also see the included wiring diagram.
  - a. Connect the wire that corresponds to pin #86 on the wiring harness to a 12V (KEY-ON) power source.
  - b. Connect the wire that corresponds to pin #30 on the wiring harness to a 12V (FULL-TIME) power source. Note: We recommend that you connect to the jump-start post as shown:



- c. Connect the wire that corresponds to pin #87 on the wiring harness to the red wire at the FASS pump.
- d. Run the wire that corresponds to pin #85 on the wiring harness through the firewall to the throttle pedal.
- e. Install the throttle switch onto the pedal.



- i. Remove the 10 mm nut from the position shown by the purple arrow.

- ii. **Using the provided washer and nut**, Install the bracket as shown. Take the switch off of the bracket for ease of install.
  - iii. Hook up the power wire (which is the wire from the relay) to the silver wire terminal on the switch using the red connector provided in the kit. Hook up a well-grounded wire to the brass colored wire terminal on the switch.
  - iv. Reinstall the switch onto the bracket.
  - v. Press the pedal to the floor, you should here the switch click at the end of the pedal's travel. If there the switch does not click at wide open throttle, loosen the 10 mm nut, rotate the bracket, tighten the nut, and recheck.
  - vi. Make sure the wires are out of the way and trim the carpet away from the switch, if necessary, to ensure that it does not interfere.
- f. *OPTIONAL*: You may place a switch on the wire that runs from the throttle switch to ground to allow manual operation of the auxiliary system.
- g. Connect the green wire from the FASS pump to a *good* engine ground.
36. Reconnect the negative battery cables to both batteries.
37. Now test the system by putting the ignition into the ON position, but do not start the vehicle. Press the throttle pedal to the floor; you should hear the pump operate. If you do not hear the pump, double-check your wiring and connections with the supplied diagram.
38. Start the engine and check for leaks or unusual noises.
39. After the engine warms up, refill the coolant reservoir to the proper level.

## **Have Any Questions?**

Thank you for purchasing the CP3 High Pressure Fuel Injection Pump. Please check our website at <http://www.atsdiesel.com> for technical support and other performance products such as the TripleLok™ 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**

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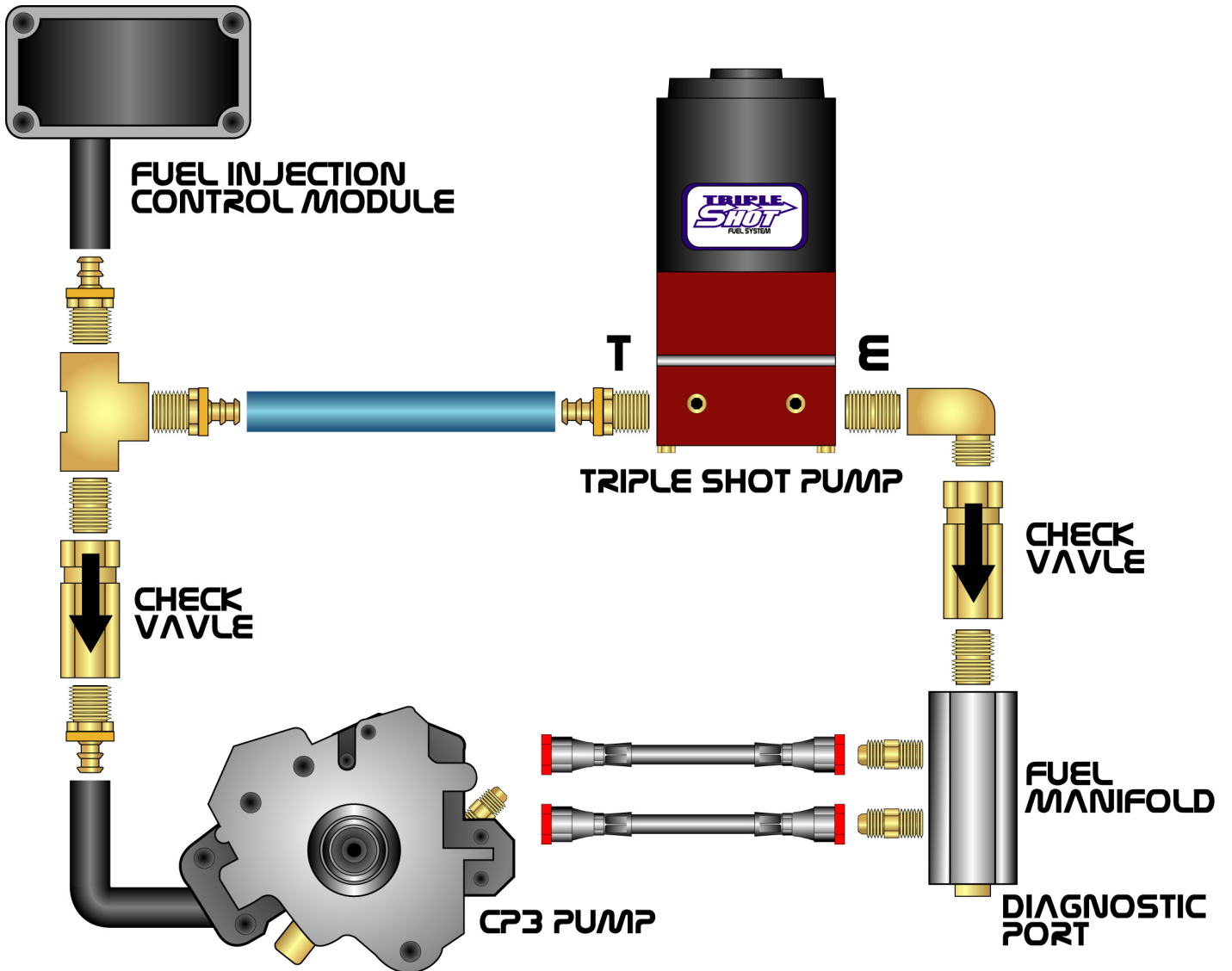
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CP3 Pump Installation  
Fuel Line Diagram  
GM-Duramax





# CP3 Pump Installation Wiring Diagram

