

# Oregon Fuel Injection

## Bosch VP44 Removal and Installation

Cummins 5.9L

### VP44 Pump General Information

The VP44 fuel injection pump performs four basic functions:

1. Produces high pressure fuel required for injection
2. Meters the exact amount of fuel for each injection cycle
3. Distributes high-pressure, metered fuel to each cylinder at the precise time
4. Varies injection timing relative to engine speed.

### VP44 Pump Removal

Disconnect the battery cables, negative (-) cable first.

It is recommended to bar the engine over so that the keyway on the gear is at the 12-o'clock position when removing the fuel pump. This position can be found by taking the oil fill or fuel pump gear access cap off, whichever applies, and aligning the keyway in the fuel pump gear to the top dead center (TDC) position on the front cover. In this position the line on the fuel pump gear will approximately be in the 7-o'clock position.

**NOTE: Doing the above will help prevent the fuel pump key from falling into the housing if it is loose**

17 mm  
Disconnect the fuel return line.

17 mm  
Disconnect the fuel pump supply line.

19 mm  
Remove the high-pressure lines.  
Remove the 9-pin electrical connector from the fuel pump control module (FPCM).

10 mm  
Remove the fuel pump support bracket bolt

27 mm  
Remove the crankcase breather and gear retaining nut and washer.





T-Bar or plate style puller  
Pull the fuel injection pump drive gear loose from the pump driveshaft.

13 mm  
**NOTE: Do not drop the drive gear key inside the engine when removing the pump.**  
Remove the four mounting nuts, and remove the fuel injection pump.

## VP44 Pump Cleaning

Use a clean, dry cloth to wipe all of the oil off the back of the gear housing mounting surface and pump housing.

## VP44 Pump Installation



Install the injection pump support bracket. Finger-tighten all cap screws before final tightening.



It is recommended to bar the engine over so that the keyway on the gear is at the 12-o'clock position when installing the fuel pump. This position can be found by taking the oil fill or fuel pump gear access cap off, whichever applies, and aligning the keyway in the fuel pump gear to the top dead center (TDC) position on the front cover. In this position the line on the fuel pump gear will approximately be in the 7-o'clock position.

**NOTE: Doing the above will help prevent the fuel pump key from falling into the gear housing if it is loose.**

The keyed gear and shaft allow for the fuel injection pump to be installed in any position, as long as the markings on the front gear train align and a gear has **not** slipped.

Use an evaporative cleanser (e.g., brake cleaner, isopropyl alcohol) to clean the pump shaft and gear bore.

**NOTE: The fuel injection pump shaft has to be rotated to align with the keyway in the gear.**

Install the pump, inserting it until the mounting flange is tight to the gear case. Make sure the key does **not** fall into the gear housing. Take care **not** to damage the pump mounting o-ring. Hand tighten the mounting nuts

**NOTE: When installing the fuel pump, the dowel in the back of the gear housing has to line up with the hole in the pump mounting flange, as well as the keyway in the gear. The pump should slide in until the mounting flanges are flush. Do Not pull the pump flush with the mounting nuts or damage will occur.**

**NOTE: Barring the engine so the keyway is at the 12-o'clock position will aid in aligning the key into the keyway.**

24 mm  
Install the pump driveshaft nut and spring washer.

Torque Value:	30 n.m	[22 ft-lb ]
---------------	--------	-------------

**NOTE: Do not over tighten; this is not the final torque.**

15 mm  
Tighten the fuel injection pump mounting nuts.

Torque Value:	43 n.m	[32 ft-lb ]
---------------	--------	-------------

Tighten the brackets in the following sequence:

1. Bracket-to-fuel pump cap screws
2. Bracket-to-fuel pump brace cap screws

10 mm  
Tighten all cap screws on the support bracket.

Torque Value:	24 nm	[212 in-lb ]
---------------	-------	--------------

22 mm  
Tighten the pump driveshaft retaining nut.

Torque Value:	170 n.m	[125 ft-lb ]
---------------	---------	--------------

Install the crankcase breather.





- 17 mm | Install the low-pressure fuel lines.
- 17 mm | Install the fuel Inlet.
- 17 mm | Install the fuel return lines.
- 19 mm | Install the high-pressure line at the fuel pump.
- 19 mm | Install a high-pressure line at the cylinder head, leave #1, 3 and 5 loose for bleeding.

Connect the 9-pin connector to the VP44 fuel pump.

Connect the battery cables, negative (-) cable last.

Bump the key to the start position and allow the supply pump to run for 25 seconds, this should vent the air from the fuel supply system. Then crank the engine over until you start to get fuel out of the loosened injection (lines 1, 3 and 5), tighten each line as it begins to deliver fuel. The engine should start, but will run rough until the air is purged from the system.

**NOTE: Do Not crank the engine for more than 10 seconds before letting the starter cool down.**

**EUGENE**  
4036 West 1st Ave.  
Eugene, OR 97402  
(541) 485-1434



[www.oregonfuelinjection.com](http://www.oregonfuelinjection.com)

Oregon Fuel Injection

Oregon Fuel Injection