1989-1993 Dodge 5.9L 12 Valve Cummins Tech Information

We will address the 1989-1993 first generation trucks in a few sections.

In 1989, Dodge introduced the D250 & D350 first gen pickup powered by a 5.9L Cummins diesel. This engine featured 160hp & 400ft-lbs of torque. The 1989-1991.0 trucks were a non-intercooled engine and ran a large bowl style piston. This piston style is popular for use in high horsepower builds in 1994-1998 trucks because you can run more timing without having the injector spray outside the piston bowl.

In 1991.5, Dodge introduced an intercooled version of the 5.9L Cummins. HP ratings remained the same, but the piston style was changed to a smaller bowl and the compression ratio was upped slightly. This engine ran until the 1993 model year.

The injection pump on 1991-1993 Dodge trucks is a "VE" rotary injection pump. It is supplied by a mechanical lift pump, driven off the cam shaft that generally produces 3-5PSI of pressure. If your fuel pressure drops below 3PSI, Cummins recommends replacing the lift pump.**Click here to see our VE Cummins replacement mechanical lift pumps and upgraded electric fuel pump selection.**

1989-1991 non-intercooled trucks use a different injection pump "version" than 1991.5-1993 trucks. Keep this in mind when ordering a reman injection pump for your truck. 1991.5-1993 VE injection pump cores are hard to come by, so in most cases when you order a reman pump, you'll have to send in your core to be rebuilt. Check our our **reman VE fuel injection pumps here**. We offer stock rebuilt pumps and performance pumps that feature a **performance fuel pin and 3200RPM governor spring**, along with a "maxed out" fueling calibration.

For cold temperature starting, the 5.9L Cummins features an air intake grid heater, not glow plugs. This style is basically similar in design to a toaster element. In the intake plenum, there is a heater element that pre-heats air before it enters the engine. Not only do these elements heat up to assist with cold starting, they can also cycle on & off for several minutes after the engine is running to help reduce white smoke. You may notice your lights dimming and then brightening shortly after several times. This is normal operation in cold weather.

Fueling upgrades:
1989-1993 5.9L VE Dodge Ram Cummins trucks run well, and were at the top of their class towing wise, but there are some improvements that make these engines run a lot better.
These engines were governed at around 2500RPM. This made driving a 5 speed manual truck kind of frustrating, as you couldn't "wind out" the gears very well, just as the engine was making power, it hit the "rev limiter".
A hugely popular modification is the **3200RPM governor spring**. This will give your power band an additional 700RPM, greatly improving the driving experience.
A **performance fuel pin** is another popular upgrade. This allows the injection pump to flow more fuel, allowing for gains between 25 & 40hp.
For more power, we have a large selection of **performance fuel injectors** as well.

Turbo upgrades:
The 1989-1993 all featured an H1C non-wastegated turbocharger. The 1989-1991 trucks had a 18CM exhaust housing, and the 1991.5-1993 trucks had a 21CM exhaust housing. The stock housings allowed for good flow in the upper rpm's, but leave something to be desired in the bottom end (low rpm) power department. Changing your turbo's turbine housing to a **16CM turbine housing** will bring your turbo boost on early in the RPM range, resulting in better responsiveness in lower RPM's and less black smoke. This is a relatively easy thing to change and requires no exhaust modifications to make it work.

Achilles Heel:
ALL 5.9L Cummins from 1989-2000 have a potentially catastrophic ticking time bomb in them. On the front of the block, there is a alignment dowel that centers the timing gearcase on the block. The gearcase slides over this dowel, and the hole is open-ended. What happens is, over time, the dowel pin, which is

tapped into place in the block, vibrates loose and comes out the front hole. The pin then drops into the gears. If you are lucky, the pin will somehow make it to the oil pan and not cause any carnage.

Usually though, the pin will drop into the gears and then get forced between the pump gear or cam gear and the **timing gearcase housing**. When this happens, it cracks the housing or sometimes a large chunk of the case is displaced, causing a massive oil leak. Replacing the gearcase involves removing the cam shaft from the engine, or at a minimum, removing the cam gear, leaving the cam in the engine. Either way, this repair can cost upwards of $1500 with labor.

Worst case situation? The dowel pin can drop into the gears and break the cam gear, causing piston to valve contact. One rare case reported that the pin locked up the engine so quickly it caused the crank shaft to break. Either way, it isn't something you want to deal with.
We offer a **KDP Repair Kit for the 1989-1993 5.9L Cummins here.** It basically provides a dowel pin "tab" that installs over the hole where the dowel pin comes through, preventing it from ever dropping.
If you just bought a Cummins and have a front seal leak, now is the time to tab the dowel pin.
This issue is more of a "when" issue than a "if" issue. At some point the dowel pin will vibrate loose. It may happen at 150,000 miles or it might happen at 700,000 miles, but it will happen sooner or later. Better to fix it before it creates an expensive repair.

1989-1993 5.9L Cummins Specs:
Configuration: Inline 6 Cylinder
Displacement: 359 Cubic Inches, 5.9 Liters
Bore: 4.02
Stroke: 4.72
Both the block & cylinder head are cast iron.
The cylinder heads feature cast-in valve seats, therefore there is no risk of "dropping" a valve seat.
Firing order: 1-5-3-6-2-4
Valvetrain: OHV, 2 valves per cylinder, with solid tappets/lifters
Valve lash (cold)
Intake: .010
Exhaust: .020
Oil capacity: 12 Quarts
Governed speed: 2500RPM
HP: 160HP @2500RPM
Torque: 400ft-lbs @1600RPM