



Diesel Fuel Injection:
Fuel pumps
Injectors
Turbochargers

OAKLAND
SACRAMENTO
SPARKS, NV

1-800-4-DIESEL

CUMMINS ROBERT BOSCH

PES6P AND P7100

FUEL INJECTION PUMP

TIMING

INFORMATION

FOR MORE INFORMATION GO TO

DIAMONDDIESEL.COM

CLICK ON THE TECHNICAL DEPARTMENT LINK

DIAMOND DIESEL AND TURBOCHARGER SERVICE

CUMMINS ROBERT BOSCH PES6P AND P7100 TIMING INFORMATION

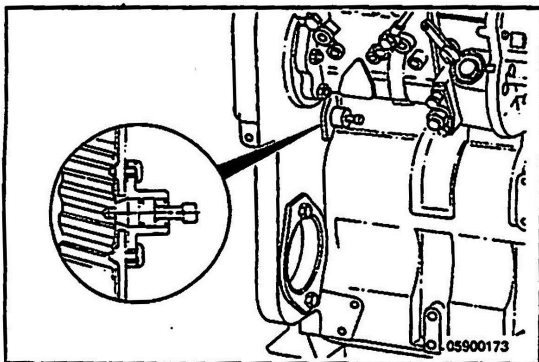
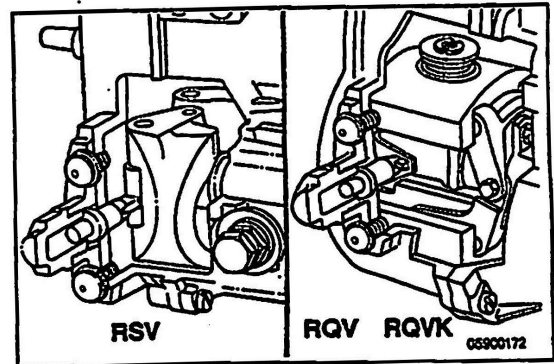
1-800-4-DIESEL

Injection Pump Timing

Fuel injection pump-to-engine timing is extremely critical. Fuel injection pump timing that is off by only a few crankshaft degrees will cause:

1. Poor performance - starting and power
2. Excessive smoke and emissions
3. Poor fuel economy
4. Excessive cylinder pressure

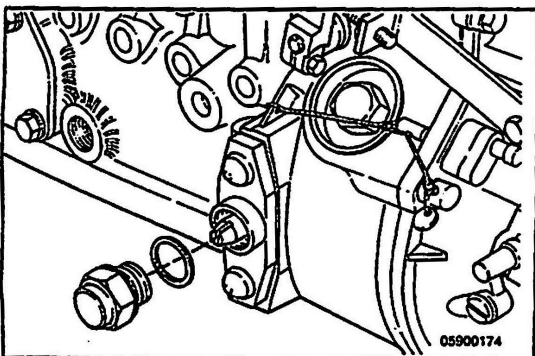
The governors have a provision for locking the fuel injection pump shaft at a position corresponding to top dead center (TDC) for No. 1 cylinder. New and reconditioned fuel injection pumps should be received with the shafts locked in this position. After the pump is installed, the pin is to be reversed and stored in the housing.



The engine is equipped with an engine timing pin to locate TDC for No. 1 cylinder.

If the timing pin is incorrectly located on the gear housing, the timing procedure will not make sure that the fuel injection pump is timed correctly.

The timing pin assembly is aligned to the gear housing to correspond to a hole in the back side of the camshaft gear when No. 1 cylinder is at TDC. If the gear housing or timing pin assembly is removed, it will be necessary to relocate it (refer to shop manual).



Injection Pump Timing - Bosch

24 mm

Remove the access plug.

DIAMOND DIESEL AND TURBOCHARGER SERVICE

CUMMINS ROBERT BOSCH PES6P AND P7100 TIMING INFORMATION

1-800-4-DIESEL

Section 4 - Inline Pumps

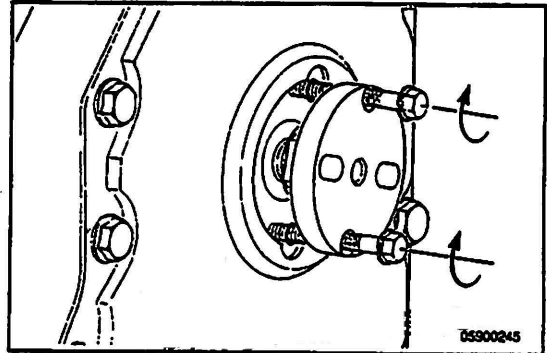
Bosch P7100 Plunger Lift Timing Page 4-23

Step: 15

With the fuel injection pump positioned at the correct plunger lift setting, use the gear puller, Part No. 3824469, or equivalent, to pull the injection pump gear off the taper of the injection pump input shaft. Remove the gear puller.

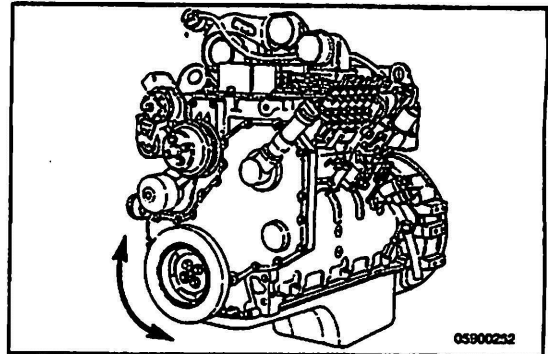
GEAR PULLER TOOL:

PART # MS-VETOOL Available at Diamond Diesel



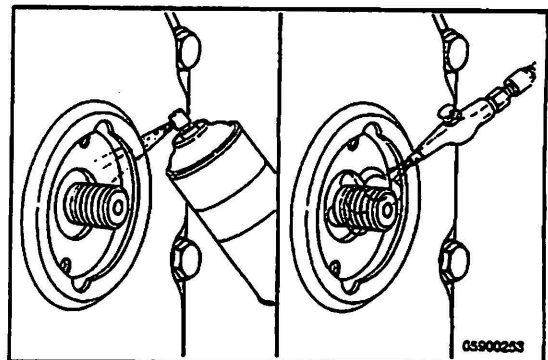
Step: 16

Rotate the crankshaft 20 degrees to 30 degrees opposite the direction of normal crankshaft rotation, then rotate the crankshaft back in the direction of normal crankshaft rotation to TDC. This step removes the backlash from the lower gear train.



Step: 17

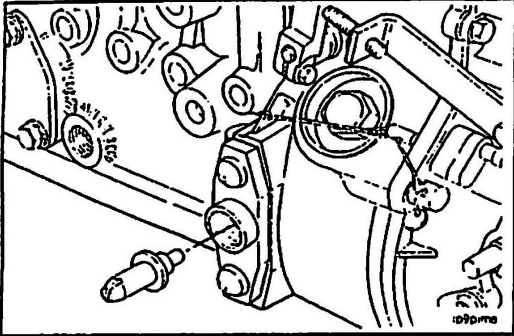
Clean the fuel injection pump shaft and gear tapers with a residue free cleaner (Cummins Part No. 3824510 or equivalent) by spraying into the gap between the shaft and gear. Dry the taper surfaces with compressed air. Failure to thoroughly clean and dry the shaft and gear tapers may result in a timing shift to the retarded side after the engine is started and run under load. This will result in low power, smoke and rough running.



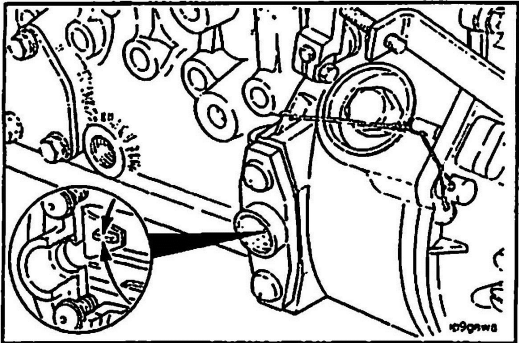
DIAMOND DIESEL AND TURBOCHARGER SERVICE

CUMMINS ROBERT BOSCH PES6P AND P7100 TIMING INFORMATION

1-800-4-DIESEL



Remove the timing pin.



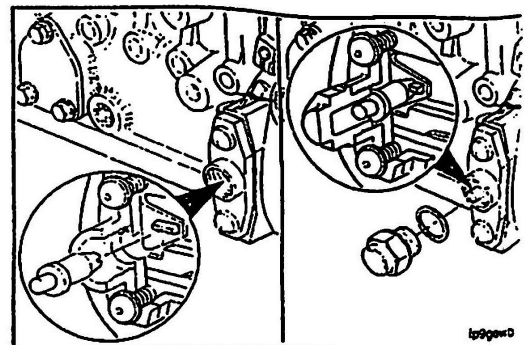
If the timing tooth is not aligned with the timing pin hole, rotate the pump shaft until the timing tooth aligns.

Reverse the position of the pin so the slot of the pin will fit over the timing tooth in the pump.

Install and secure the pin with the access plug.

The pump shaft is now locked.

Injection Pump Timing
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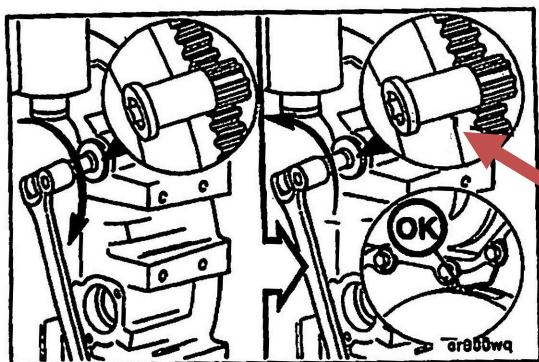


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CUMMINS ROBERT BOSCH PES6P AND P7100 TIMING INFORMATION

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Fuel Pump Timing (005-037)
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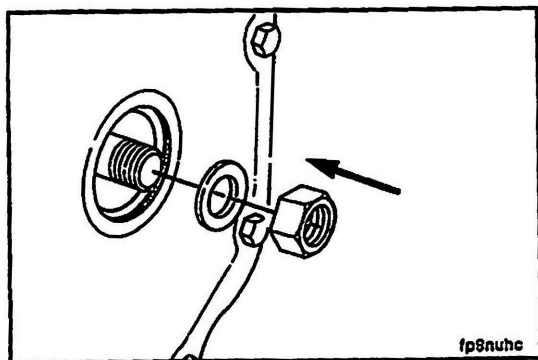
Injection Pumps and Injectors
In-Line Pumps



Slowly rotate the crankshaft **counterclockwise** approximately 40 degrees past the desired static timing specification.

Slowly rotate the crankshaft **clockwise** until the timing pointer indicates the desired static timing.

Tool # CDC7471A



CAUTION

To prevent damage to the timing pins, do not exceed the torque value given. This is not the final torque value for the retaining nut.

Install and tighten the retaining nut and washer.

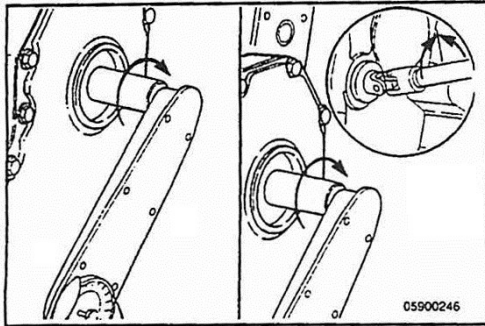
Torque Value: 12 N•m [106 in-lb]

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CUMMINS ROBERT BOSCH PES6P AND P7100 TIMING INFORMATION

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Bosch P7100 Plunger Lift Timing
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Section 4 - Inline Pumps

Step: 18

Install the input shaft lock washer and nut. Use a two step torquing process, tighten the fuel injection pump gear nut.

Torque Value: Step 1 15 N•m [11 ft-lb]

This will seat the shaft taper.

Caution: Be sure the timing pin is disengaged before the final torque step to avoid damage to the timing pin.

Hold the crankshaft from rotating (using the barring tool or other means) on the final step of the torquing sequence.

Torque Value: Step 2 195 N•m

150 Foot Pounds

Step: 19

Repeat steps 10 and 11 to verify that the final timing setting is correct.