



6.0L Powerstroke Diesel Engine Conversion



Evans Cooling Systems, Inc.
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INSTALLATION PROCEDURE – Ford 6.0L Powerstroke

Procedure for installing Evans Waterless NPG+ into a Ford 6.0L Powerstroke diesel engine

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CAUTIONARY NOTE: DO NOT FLUSH COOLING SYSTEM WITH WATER!

About 6.0L Powerstroke head studs:

The 6.0L Powerstroke engine succeeds the 7.3L Powerstroke. In earlier versions of the 6.0L, head gasket failure is common, particularly in turbocharged versions, because the OEM head bolts stretch too much. After 2006 the engines were produced with improved head studs. Many of the earlier 6.0 engines have been upgraded with improved head studs from Ford and from aftermarket suppliers such as ARP Automotive Products. “To overcome head gasket failure in your 6.0L Powerstroke diesel, ARP offers extra heavy-duty head studs.”

Installation of Evans waterless NPG+ coolant into 6.0L Powerstroke engines manufactured prior to 2006 **requires** the upgraded head studs as described above. If the upgrade has not been performed, do not proceed with the installation of Evans coolant.

The following procedure does not require the opening of block drains.

1. Supplies and equipment needed:
 - a. 7 gallons of Evans NPG+ waterless coolant. [Note: an installation at Evans used 5 gallons to fill the engine and radiator, 1 gallon for flushing, and 1 gallon for a spare. The owner’s manual indicates that 7 gallons would be required for filling the engine and the radiator. If that were true, you would need 9 gallons.]
 - b. Evans-provided labels to warn against the addition of water.
 - c. Refractometer for measuring water content – Evans Part No. E2190.
 - d. An Evans “Water-Chaser” P/N E2195, a device useful for inserting coolant for flushing.
 - e. A high-volume air source (rather than high pressure) such as Makita blower Model UB 1101, widely available from the internet. A shop doing installations commercially should consider a Model MB 3CD Master Blaster. A powerful (and clean) shop vac, used in the blower mode, is also an acceptable high-volume air source.
 - f. A flat round disc 2.25” diameter of sheet metal, plastic, or even cardboard.
 - g. Funnels
2. If the engine is hot, wait for it to cool to a safe temperature. Never open a cooling system pressure cap if the engine is hot.

3. Place containers to catch coolant at draining locations.
4. Remove the pressure cap.
5. Drain radiator from the petcock.
6. While coolant is draining, disconnect the heater hose from the RH side of the engine and unbolt the thermostat.



Disconnect heater hose here

7. Pull off bottom radiator hose completely. Leave it to drain.
8. Turn the key “on”, set heater control to “max” and turn on the blower.
9. Blow air through the open heater hose until the flow out the bottom stops
10. Insert about a quart of Evans NPG+ waterless coolant into the heater hose and then blow air through the heater hose until the flow out the bottom stops.
11. Turn the key “off”.
12. The removed thermostat reveals a “bottom” hole and a “side” hole in the thermostat housing. Place the disk to cover the bottom hole.



Thermostat housing with disc covering the bottom (bypass) hole
Arrow points to side hole that goes to the cylinder head

13. Blow air into the housing and through the side hole until flow out the bottom stops.

14. Pour about 3 quarts of Evans NPG+ waterless coolant into the side hole. Then blow air into the housing and the side hole until flow out the bottom stops.
15. Remove the disc from the thermostat housing.
16. Re-assemble the thermostat, re-connect the heater hose, and re-connect the bottom radiator hose. Close the radiator petcock.
17. Police all connections to make sure they are secure.
18. Add coolant to the expansion tank until the hot line is reached. Replace the pressure cap.
19. Use the same radiator cap without modifications. Although it is possible to run an open-vented system, the pressure cap will give you a virtually “sealed system”. Because there will be no vapor component, the pressure will remain quite low within the system (the only pressure will come from the expansion of the liquid against the air in the top of the expansion tank). It is unlikely that the pressure will ever breathe outward and that outside air will enter the system on a cool-down.
20. Start the engine and operate it at idle.
21. Check that the pump has no air pocket by briefly opening the vent line at the expansion tank that comes from the RH side of the engine and observing flow.
22. Add “do not add water” warning labels.
23. Drive the truck until the thermostat opens. More coolant will probably be required at that point, so be sure to carry some extra.
24. It may take several cycles of heating and cooling to fill all of the cooling system cavities. After several days, check the water content of the coolant in the expansion tank with the Brix scale refractometer or send a sample for testing to Evans Cooling Systems, Inc., P.O. Box 434, Parkerford, PA 19457, phone 888-990-2665.
25. Bar’s Leaks Liquid Aluminum Stop Leak is compatible with all Evans waterless coolants and is effective in stopping small leaks.

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