

Ford 6.0L PowerStroke HPOP Leak Test

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Bostech receives a high percentage of high-pressure oil pumps under warranty that are found to be in perfect working order. Proper troubleshooting of the high-pressure system with all related components is essential for diagnosing and correcting system failures.

Air testing the high-pressure system is a helpful way to pinpoint areas that may be causing system failures, it is not a fool proof solution nor is it a good practice to air test immediately after replacing components of the system. Newly replaced seals need to be oil saturated in order to seat properly, air testing of a “dry” system can show a false failure. Also noted: To perform the air test the technician needs to be able to determine the range of air noise being heard, Such as the air change in IPR valve from open to close, the slight air noise that is normal from injectors, or the slight air noise from the HPOP’s IPR drain port that is normal.

What’s Needed:

- Scan Tool equivalent to Ford IDS, or WH02618 2-wire IPR Pigtail
- High-Pressure Pump Test Adapter
- Shop Air with 100 psi minimum
- Stethoscope, preferable Open Tube to aid in hearing small leaks

To Get Started:

- Check for correct engine oil level
- Verify base engine oil pressure
- If engine will start, warm engine to an oil temperature greater than 176 F.
- Higher oil temperatures will help to effectively diagnose oil system leaks
- Depending on application, remove the ICP sensor and install test adapter fitting or remove the test port plug on top of the high-pressure oil pump and install test adapter fitting.

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Procedure:

- Pressurize the high-pressure oil system with at least 100 psi of air pressure
- Allow oil to drain through the IPR valve for 2 minutes, air should be coming through the IPR drain location
 - **Note:** Air leak at the IPR drain of the high-pressure oil pump with the IPR duty cycle at 0% or no voltage applied is normal.
- Using the scan tool, close the IPR valve by increasing the IPR duty cycle to 85%, or if using 2-wire pigtail, apply 12 volts and ground directly to IPR to close it.
 - Listen for the air noise to change
- If no air noise change can be heard the IPR valve may not be functioning correctly and a IPR valve diagnostic needs to be ran. If air noise change is heard continue test procedure.
- Remove oil filler cap from passenger side valve cover and crankcase vent tube from driver side valve cover and listen for air leaks. Remove valve cover from side of engine that leak can be heard.
- Using a stethoscope, cycle the IPR valve off and on to isolate the location of the leak.
- Air leaks from underneath the valve cover could be from several locations:
 - Injector oil inlet seal – top of injector seal damaged
 - Oil Rail Ball tube seal – Ball Tube mounting seal damaged
 - Oil rail front port plug seal – “dummy plug” seals damaged
 - Stand-pipe seals damaged
 - **Note:** slight air leakage around the injector oil exhaust ports is normal
- Air noise heard at the back of the engine could indicate a leak at the branch tube assembly STC fitting.
 - **Note:** Bostech’s HPOP’s have the updated STC fitting whereas the old-style fittings were prone to failure.
- It is possible to have the HPOP leak from the high-pressure system into the low-pressure system within the pump. To test, remove the oil filter cap and filter and listen for air leak with air pressure applied. If a leak from the high-pressure to low-pressure is found, the high-pressure oil pump needs to be replaced.
- Once repairs are complete verify correct ICP sensor readings and IPR duty cycle while cranking the engine.

