Zipper's Installation Tips

Inspecting and Qualifying Piston Oiler Jets on Milwaukee Eight® Engines

When you increase the output of a Milwaukee Eight® engine there is a substantial list of potential problems that could cause damage to a new big bore engine kit upon installation.

During the original installation of the Piston Oiler Jets at the factory, they use self-tapping screws that secure the Piston Oiler Jets onto the crankcase pad. Some of these screws actually bottomed out before the "oiler" was secured, allowing the oil to leak behind the gasket, causing oil to overfill and overheat the engine. Most severely, it reduces the oil volume and changes the spray pattern for proper lubrication on the pistons. There are other things to check with the Piston Oiler Jets besides properly securing the hardware to the crankcase in order to prevent the Piston Oiler Jet leakage. Read on for more details.

If you choose to install a new cylinder set on the engine without removing/blue printing the "oilers",
"YOU" risk having damaged engine parts as a result, not covered under any warranty. The Piston Oiler Jets are required to function at 100% efficiency to properly lubricate the pistons, rings and cylinder liners.

The Piston Oiler Jet Blue Print process includes:

See reverse for installation tips ->

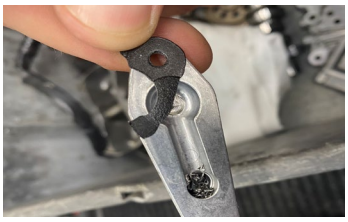
- Remove the Piston Oiler Jet assembly.
- Inspect the OE Piston Oiler Jet and oil feed canals for trapped debris.
- **If debris is found, drop the oil pan, and clean entire oil system**.
- Replace the Piston Oiler Jets with new ones if you find debris in the crankcase.
- Always use an upgraded "Piston Oiler Jet" gasket. ***Zipper's Performance # 632-174***
- Make sure the hardware is properly secured at ***25 to 35 INCH pounds*** to assure there are no leaks.

Zipper's Performance **recommends**, on ***ANY big bore cylinder upgrade***, that both **Piston Oiler Jets must be removed, tested, inspected and blue printed, or replaced to assure they are flowing and mounted properly without leaks for the proper function of lubricating the pistons, rings and cylinder liners.**

We find issues with the Piston Oiler Jets that may include:

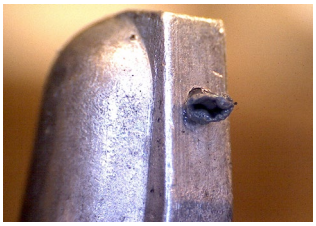
- Loosely mounted, leaking Piston Oiler Jets that leak oil into the sump instead of squirting the piston underside.
- Debris stuck in check valves limiting oil flow, starving the piston and cylinder walls of needed lubrication.
- Piston Oilers Jets clogged with aluminum chips, casting slag, or silicone sealer debris circulating in the engine and at that point should indicate the need for a complete engine tear down.

This photo is an example of a Piston Oiler Jet producing bubbles instead of a spray due to blockage.



Early M-8 engines had a poorly designed gasket that did not seal properly. Note the debris leading to the piston oiler jet head.

This is a better view of the debris found in a Piston Oiler Jet galley left behind from manufacturing slag or component wear.



This jet "killed" 2 sets of pistons before the installer found it. The 1mm feed hole was 100% blocked with case sealer from the OEM assembly process.

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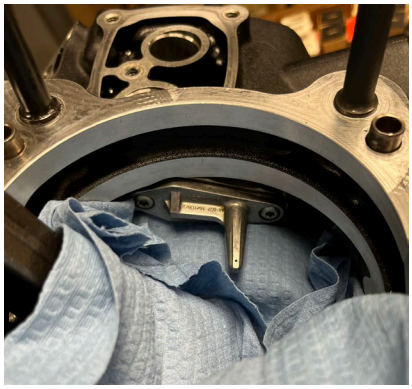
Removing and Installing Piston Oiler Jets for Inspection or Replacement



Pack area around cool jet with clean towels to prevent dropped screws from entering crankcase.

Loosen jet mounting screws to the end of their threads, but do not relieve pressure on screw.

Place small magnet on screw when removing socket and screw together.

Follow instructions above for removal of jets. After debris inspection and/or replacement, follow the steps below for installation. If there is ***any*** reason to doubt the integrity of the Piston Cooling Jets (previous engine failure, etc), ***replace the jets without question – they're inexpensive!***

Check screw thread depth by installing screws without the jet. Verify that the screw threads in far enough to properly clamp the jet in place.

Put a dab of grease on screw head to keep screw attached to socket. Apply blue thread locker to screw. Install new supplied gasket and carefully start screw into case threads.

Repeat for second screw. Use inch-pound torque wrench and tighten screw to 35 inch-pounds. Repeat for the other cylinder.

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