

## Turbo oil leakage

### Troubleshooting information for MX turbocharger compressor side oil leakage issues

Turbocharger rotor shaft oil seals require a favorable pressure differential to prevent lubricating oil from being drawn into the inlet air stream. Improvements to the MX10 engine calibration have been identified to provide the required seal pressure differential and reduce the occurrence of compressor oil leaks into the intake. Make sure that the truck has this update to avoid unnecessary replacement of the turbo. Any disruption of the calibration (boost leaks, exhaust leaks, and so on) can also cause compressor side oil leakage and must be investigated as part of the inspection.



Engine must be off during inspection.

#### Symptom: Intake oil leak

Possible Cause	Solutions
Engine calibration software not up to date.	<ul style="list-style-type: none"> <li>Updated the truck with the most recent engine software.</li> </ul>
Missing or dirty air cleaner.	<ul style="list-style-type: none"> <li>Clean or replace air cleaner element.</li> </ul>
Sticking BPV valve.	<ul style="list-style-type: none"> <li>Initialize the BPV valve to make sure that it has full travel.</li> </ul>
Excessive crankcase pressure.	<ul style="list-style-type: none"> <li>Inspect the crankcase ventilation system for obstructions.</li> </ul>
Turbocharger flange or clamping bolts are loose.	<ul style="list-style-type: none"> <li>Replace gaskets and tighten as necessary.</li> </ul>
Boost leaks, joints, and intercooler.	<ul style="list-style-type: none"> <li>Check all connections between the turbocharger and engine intake for leakage. Inspect the intercooler tanks and tubes for damage. Pressurize and soap, if necessary.</li> </ul>
Disconnected, loose, collapsed, or restricted intake between air cleaner and turbocharger.	<ul style="list-style-type: none"> <li>Inspect piping for damage or foreign objects, and repair as necessary.</li> </ul>
Compressor foreign object damage.	<ul style="list-style-type: none"> <li>Remove turbo inlet piping and visually inspect the compressor for blade damage.</li> </ul>

Worn shaft bearings.	<ul style="list-style-type: none"> <li>Remove the turbo inlet piping, and check shaft play. Compressor wheel should not contact housing.</li> </ul>
Restricted turbocharger drain.	<ul style="list-style-type: none"> <li>Inspect the turbocharger drain for kinks or bends that restrict oil from the turbo.</li> </ul>



The MX engine can be pressurized for leak testing using Part #1903034 (air intake/exhaust leak test kit). Perform the job 'Intake/exhaust pressure testing' according to the instructions in Engine Rapido.

## Service Recommendations

All trucks found to have turbo compressor side oil leakage must have their software version confirmed. The District Service Manager for each area has the required information for determining which software version is used in the truck.

- Trucks with pre-fix calibrations must be updated with the most recent engine software. In addition, the possible causes listed above must be investigated. Once the possibility of any leaks has been thoroughly ruled out and the software updated, dip the intercooler tanks for oil accumulation. If more than 25.4 mm [1"] of oil is present, the intercooler must be cleaned before returning to service. If less than 25.4 mm [1"], complete the repair and return the truck to service. Do not replace the turbocharger.
- Trucks with post-fix calibrations must troubleshoot the possible causes listed in the table above. If no causes are found, the service organization must contact their District Service Manager for further guidance.

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