

SB-10032424-2905



IMPORTANT SERVICE INFORMATION FOR:

- ✓ SERVICE MANAGER
- ✓ SERVICE ADVISOR
- ✓ TECHNICIAN
- ✓ PARTS DEPARTMENT
- ✓ WARRANTY PERSONNEL

BULLETIN NUMBER:
IB09-J-002

ISSUE DATE:
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GROUP:
ENGINE

TURBOCHARGER INSPECTION

AFFECTED VEHICLES

- 2007-2010MY Isuzu N-Series
- 2007-2010MY GMC and Chevrolet W-Series
- 2007-2009MY Isuzu F-Series
- 2007-2009MY GMC and Chevrolet T and C-Series
Equipped with Diesel Particulate Filter (DPF)

INFORMATION

Investigation of returned turbochargers has identified a common occurrence of turbochargers being replaced for internal oil leaks. **Results show that there is no fault with the turbocharger.** The perceived oil leak actually may be a normal characteristic of the closed positive crankcase ventilation (PCV) system or some other unidentified condition. In order to better service the customer and reduce the replacement of undamaged turbochargers, Isuzu has provided the following inspection information in order to aid the technician in properly diagnosing turbochargers. Turbochargers passing the internal inspections provided should **NOT** be replaced.

The purpose of the closed PCV system is to remove harmful gases from the crankcase before damage occurs and combine them with the engine's normal incoming air charge preventing these harmful gases from entering the atmosphere. Unfortunately, blowby gas production and air intake demands do not always match allowing some oil vapor from the crankcase to enter the intake system, including the turbo charger. As a result, this condition may lead to the incorrect diagnosis. **Oil in the intake system is common for a closed PCV system.**

The oil seal inside the Isuzu turbocharger is a dynamic seal. Air pressure (boost pressure) on the compressor side and exhaust pressure on the turbine side keep the lubricating oil inside the turbocharger center housing. A reduction in pressure on either side of the center housing will allow oil to pass into either the intake or the exhaust side on the turbocharger. In order to correct the oil bypassing the seal, the source of the pressure reduction must be located and corrected. **The most common causes of this condition are a restricted air filter, incorrect engine oil and/or loose intake hose clamps or excessive crankcase pressure.**

Be sure that air filter maintenance and oil changes are performed per the Owner's Manual. Inspect these items before continuing into diagnosis. These inspections can save you and your customer time and money. A TURBOCHARGER FAILURE CAUSED BY ONE OF THESE ITEMS IS NOT A WARRANTABLE REPAIR.

ELECTRICAL INSPECTION

Using IDSS check for the following turbocharger related DTCs: P003A, P0045 (SB08-J-001) P0234, P0237, P0238, and P0299. If any of these DTCs are present, follow the diagnostic information in the appropriate service manual to correct the condition.

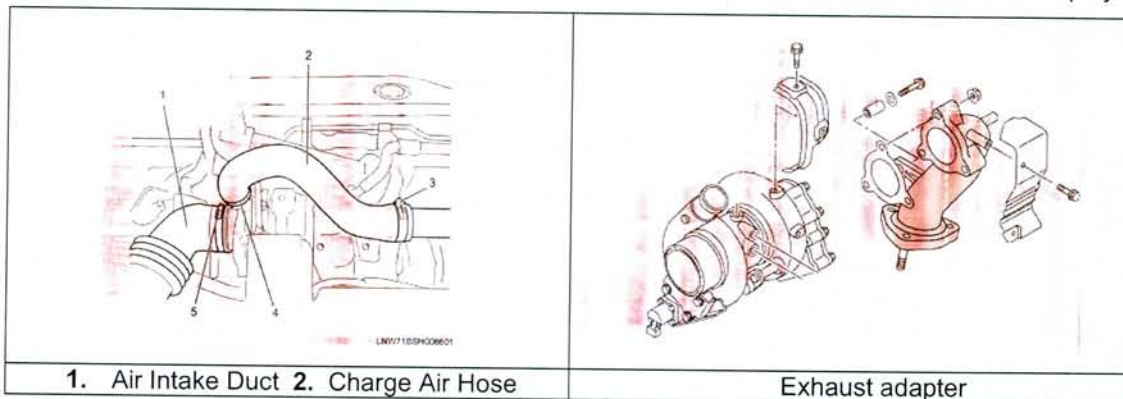
EXTERNAL VISUAL AND MECHANICAL INSPECTION

Any failures found during these inspections should be repaired per the current published Service Manual.

- Inspect the engine oil level. Excess engine oil level can lead to increased oil carryover in the PCV system.
- Inspect PCV hose and PCV oil separator (6HK1 engine only) for obstruction or blockage. A blocked PCV hose will lead to increase engine crankcase pressure and could cause a turbocharger oil leak.
- Listen for unusual mechanical noise and watch for vibration.
- Listen for high-pitched noise. This can indicate air or gas leaks.
- Listen for noise level cycling. This can indicate a restriction in the air cleaner or duct.
- Inspect for missing or loose nuts, bolts, clamps and washers.
- Inspect for loose or damaged intake and exhaust manifolds and their duct clamps.
- Inspect for damaged or restricted oil supply and drain lines.
- Inspect for cracked or deteriorating turbocharger housings.
- Inspect for external oil or coolant leakage.
- Inspect for obvious heat distortion.
- Inspect for an obviously restricted air filter.

INTERNAL VISUAL INSPECTION

Remove the air intake duct, charge air hose and exhaust adapter from the compressor. Using an inspection light, inspect the compressor and turbine wheels for evidence of foreign object damage. If one or both of the wheels are damaged, a foreign object(s) probably entered through the intake or exhaust system. Identify the origin of the foreign object. Foreign objects usually come from human error or deteriorated engine/intake systems. Repair the source for the foreign object and replace the turbocharger assembly. If **NO** damage is found, inspect the radial and axial shaft play.



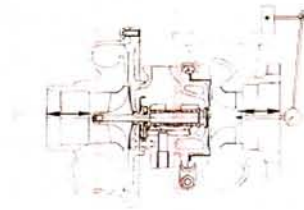
RADIAL AND AXIAL INSPECTION

Perform the following radial and axial play inspections. Refer to the Turbocharger section in the appropriate service manual for detailed procedures. If measured play is within specification, there is no mechanical problem with the turbocharger, there are no turbocharger-related DTC's, and the turbocharger spins freely by hand, then it SHOULD NOT be replaced. Review the list of external visual and mechanical inspections for other potential issues.

• Wheel shaft axle play

Spin turbo shaft several times by hand before taking the measurement. Be sure the shaft spins freely. This will remove some excess oil from the bearings which should provide a more accurate measurement. Use a dial gauge to measure the wheel axle shaft play when a force of 12 N (2.6 lb) is alternately applied to both sides of the compressor wheel.

Axle play	Maximum limit mm (in)
4HK1	0.09 (0.0035)
6HK1	0.09 (0.0035)

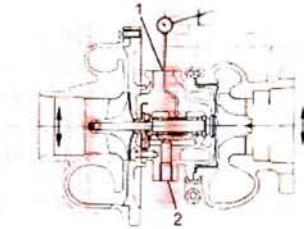


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• Wheel shaft and bearing clearance

Use a dial gauge to measure the clearance between the wheel shaft and the bearing. For proper measurement push up and pull down on the turbine and compressor wheels at the same time. Moving only one side or cocking of the shaft can lead to a smaller inaccurate measurement.

Clearance	Maximum limit mm (in)
4HK1	0.17 (0.0067)
6HK1	0.14 (0.0055)



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