



**IMPORTANT SERVICE
INFORMATION FOR:**

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

BULLETIN NUMBER:
IB14-J-002B

ISSUE DATE:
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GROUP:
ENGINE

OIL IN THE INTAKE – TURBOCHARGER INSPECTION

AFFECTED VEHICLES

- 2011MY – Current Isuzu N-Series Diesel Vehicles
Equipped with Diesel Particulate Filter (DPF)
- 2018 – 2021 Isuzu F-Series

This bulletin is being revised to update affected models and model years and procedures and supersedes bulletin IB14-J-002A. Please discard bulletin IB14-J-002A.

INFORMATION

An investigation of returned turbochargers has identified a common occurrence of turbochargers being replaced due to internal oil leaks ***when, in fact, there is no oil leak in or other 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.

The purpose of the closed PCV system is to keep harmful blowby gas from entering the atmosphere. Unfortunately, blowby gas production and air intake demands do not always match which allows some oil vapor from the crankcase to enter the intake system. As a result, this condition may lead to an incorrect diagnosis. ***Oil in the intake system is common for a closed PCV system and is not a good indicator of a turbocharger failure.***

The oil seal inside the Isuzu turbocharger is a dynamic seal (not a rubber seal). Air pressure (i.e., 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 of the turbocharger. In order to stop oil from bypassing, 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, loose intake hose clamps and/or excessive crankcase pressure.***

In order to better service the customer and help prevent the unnecessary replacement of undamaged turbochargers, we are providing the following inspection information designed to aid the technician in properly diagnosing turbocharger concerns.

NOTE: Turbocharger replacement requires pre-authorization from ICTA; you must contact your DSPM **BEFORE** replacing a turbocharger.

INSPECTION INFORMATION

Check the following items as part of normal turbocharger diagnosis.

IMPORTANT: *If any of these conditions are found, the turbocharger most likely is OK and should **NOT** be replaced.*

A TURBOCHARGER FAILURE CAUSED BY ONE OF THESE ITEMS IS NOT A WARRANTABLE REPAIR.

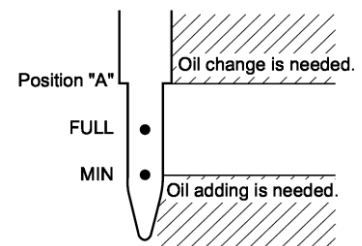
- **Air Filter** – Should be clean without restriction. A restricted air filter can create a vacuum condition on the intake system, which may draw excessive oil through the closed PCV system. Check the Filter Minder Gauge, if equipped, to determine whether excessive inlet restriction has been recorded.

➤ If the air filter is restricted, replace the air filter as part of vehicle maintenance.



- **Oil Level** – Should not be exceeding the “MAX” level. A high or overfilled oil level will result in high crankcase pressure forcing excessive oil through the closed PCV system into the air intake.

➤ Adjust the oil level to the correct level as part of vehicle maintenance.



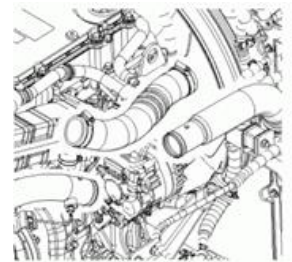
- **Oil Condition** – Check the oil quality for deterioration (lack of maintenance) or dilution (fuel in the oil). Poor oil quality can lead to aeration of the oil. Aerated oil will increase crankcase pressure forcing excessive oil through the closed PCV system into the air intake. Check for signs of aeration (milky color).

➤ Replace poor quality or diluted engine oil as part of vehicle maintenance. If diluted, find the source of dilution and correct.



- **PCV System (4HK1 engine only)** – Inspect the PCV hose and the PCV oil separator for obstruction or blockage. A blocked PCV hose will lead to increased engine crankcase pressure and could cause a turbocharger oil leak. Please reference service bulletin – “SB12-J-004 Air Cleaner Oil Intrusion Prevention – Bracket and Clip” and “SB19-J-001A Oil in the Air Cleaner – Updated Service Duct (Service Part)” for additional information.

➤ Clean or replace any damaged or plugged hoses as part of vehicle maintenance.



- **Noise** – Listen for high-pitched noises, which can indicate air or gas leaks. An air leak can cause unstable intake pressure by allowing oil to leak through the turbocharger’s dynamic seal.

➤ Locate, repair or replace any loose or damaged hoses (metal, plastic or rubber) or clamps.

EXTERNAL VISUAL AND MECHANICAL INSPECTION

Any failures found during these inspections should be repaired as per the current published Service Manual applicable to the vehicle in question.

- Listen for unusual mechanical noise and watch for vibration.
- General Installation - Inspect for missing or loose nuts, bolts, clamps, washers, loose or damaged intake and exhaust manifolds and their duct clamps, damaged or restricted oil supply and drain lines, cracked or deteriorated turbocharger housings, external oil or coolant leakage and/or obvious heat distortion.

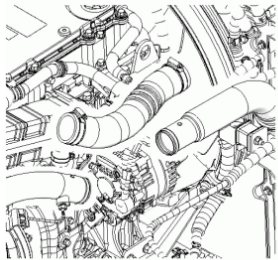
INTERNAL VISUAL INSPECTION

When inspecting a turbo it is normal for the turbo to have what may be deemed “excessive play” in the turbo shaft bearings because there is no oil pressure being supplied to the turbo.

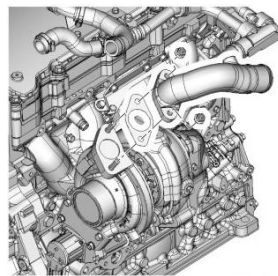
Wiggling the turbo shaft with the engine off may lead the technician to feel there is excessive play in the turbo bearings. Some play in the turbo shaft with the engine off is normal. A technician may also notice that pulling or pushing on the turbo shaft can cause the turbo blades to hit the housing. This can also be normal, and should not necessarily lead to a turbo replacement.

The turbo rotates at extremely high speeds. If the bearings did have excessive wear, the turbo blades would hit the housing. If there are no signs of the blades hitting the housing, do not replace the turbo.

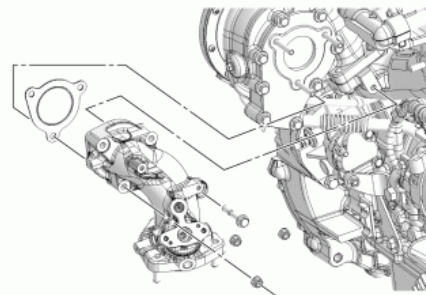
Remove the air hose, the turbocharger inlet pipe and the exhaust adapter from the compressor. Using an inspection light, inspect the compressor and turbine wheels for evidence of foreign object damage. If one or both of the wheels are damaged, a foreign object(s) has probably entered through the intake or exhaust system. Be sure to identify the origin of the foreign object, as foreign objects tend to enter the system as a result of human error or deteriorated engine/intake systems. Repair the source of the foreign object’s entry and replace the turbocharger assembly. If **NO** damage is found, inspect the radial and axial shaft play.



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1. Air Hose
2. Turbocharger Inlet Pipe

Exhaust Adapter

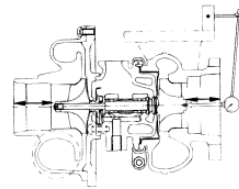
INTERNAL RADIAL AND AXIAL INSPECTION

Perform the following radial and axial play inspections. Refer to the Turbocharger section in the appropriate service manual. If measured play is within specification, there is no mechanical problem with the turbocharger, there are no turbocharger-related DTCs, 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 Axial Play

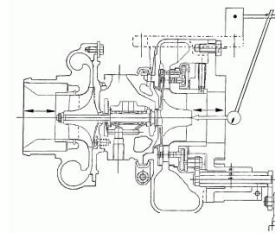
Spin the turbo shaft several times by hand before measuring, and be sure the shaft spins freely. This will remove some excess oil from the bearings, which should provide a more accurate measurement. Use a dial gauge to measure the wheel axial shaft play when a force of 12 N (2.69 lb) is alternately applied to both sides of the compressor wheel.

4HK1 Axial Measurement	Maximum Limit mm (in)
14MY – 21MY	0.13 (0.0051)
11MY – 13MY	0.09 (0.0035)



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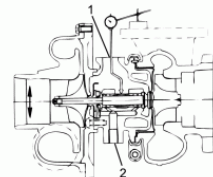
4JJ1 Axial Measurement	Maximum Limit mm (in)
17MY – 18MY	0.13 (0.0051)
11MY – 16MY	0.09 (0.0035)



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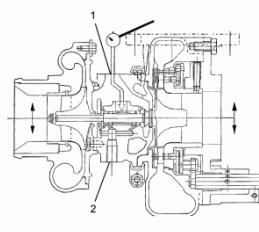
Use a dial gauge to measure the clearance between the wheel shaft and the bearing. For proper measurement, push up and pull down on the turbine and compressor wheels at the same time. Moving only one side or cocking of the shaft can lead to a smaller, inaccurate measurement.

4HK1 Radial Measurement	Maximum Limit mm (in)
11MY – 21MY	0.17 (0.0067)



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4JJ1 Radial Measurement	Maximum Limit mm (in)
11MY – 18MY	0.17 (0.0067)



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