
ENGINE 4J SERIES

SECTION 6G TURBOCHARGER

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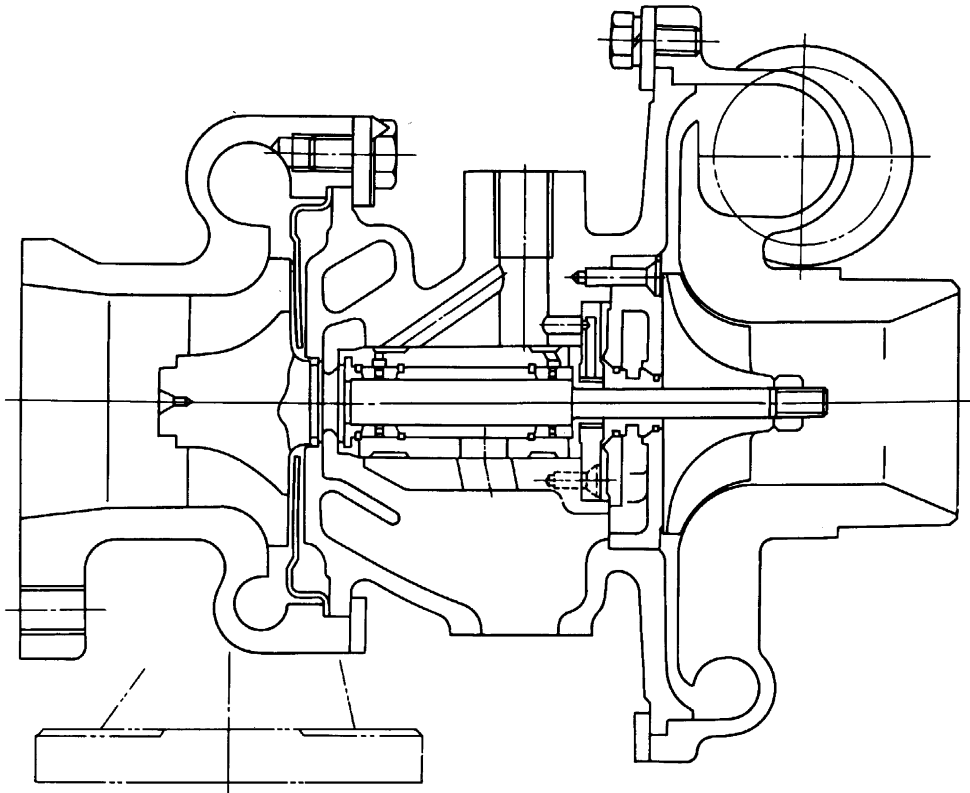
TURBOCHARGER

Main Data and Specifications

Model		IHI RHF 4H	IHI RHB 5
Turbine type		Mixed-flow	Radial-inflow
Compressor type		Centrifugal	
Maximum permissible speed	rpm	180,000	
Wastegate opening pressure	kPa (mmHg)	109 ± 4.4 (815 ± 33)	120 ± 4.8 (898 ± 36)
Weight	N (kg/lb)	41 (4.2/9.3)	45 (4.6/10.1)

IHI: Ishikawajima-Harima Heavy Industries., Ltd.

GENERAL DESCRIPTION



N6A3600E

The turbocharger internal mechanism consists of the turbine wheel, the compressor wheel, and the radial bearings. These parts are supported by the bearing housing.

The turbocharger external mechanism consists of the compressor housing air intake port and the turbine housing air exhaust port.

The turbocharger increases air intake efficiency. This results in increased engine power, reduced fuel consumption, and minimal engine noise.

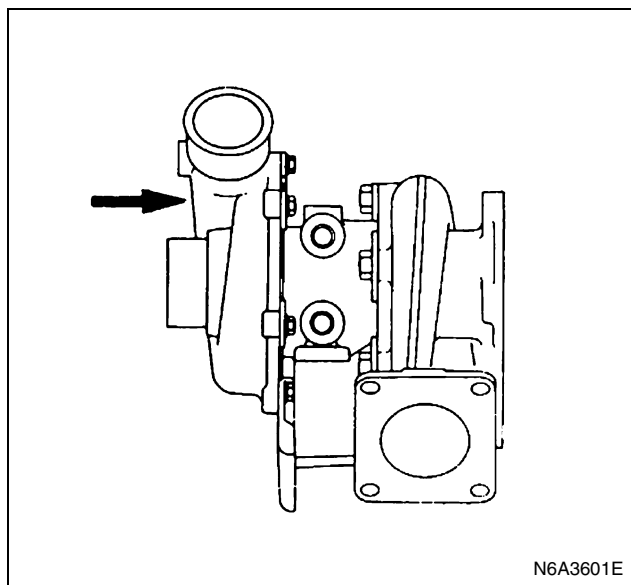
The turbocharger operates at very high speeds and temperatures. Part materials have been carefully selected and machined to extremely high precision.

Turbocharger servicing requires great care and expertise.

If reduced performance is noted, check the engine for damage or wear. If there is no apparent engine damage or wear, trouble with the turbocharger is indicated.

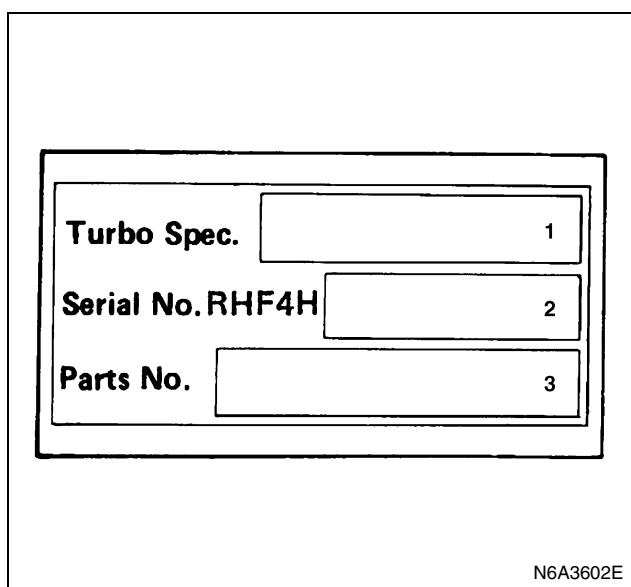
Identification of Unit

The turbocharger nameplate gives the date of manufacture and other important information required to identify the unit when service inquiries are made.



The turbocharger nameplate has the following information stamped on it.

1. Turbocharger Specification Number, Production Year and Month
2. Production Date, Serial Number
3. ISUZU Parts Number



Turbocharger Servicing

1. Refer to TROUBLESHOOTING in this Manual to determine whether or not turbocharger repair or overhaul is required.
2. The following procedures should also be performed (either with the turbocharger on the vehicle or removed from the vehicle but not disassembled) to determine whether or not turbocharger repair or overhaul is required.

- Visual checks
 - Clearance measurements
 - End play measurements
- Refer to INSPECTION AND REPAIR

3. The turbocharger compressor and turbine housing may be removed from the center housing and rotating assembly (CHRA) for further visual inspection.
- Refer to DISASSEMBLY and REASSEMBLY.

Precautions

Turbocharger servicing requires great care and expertise.

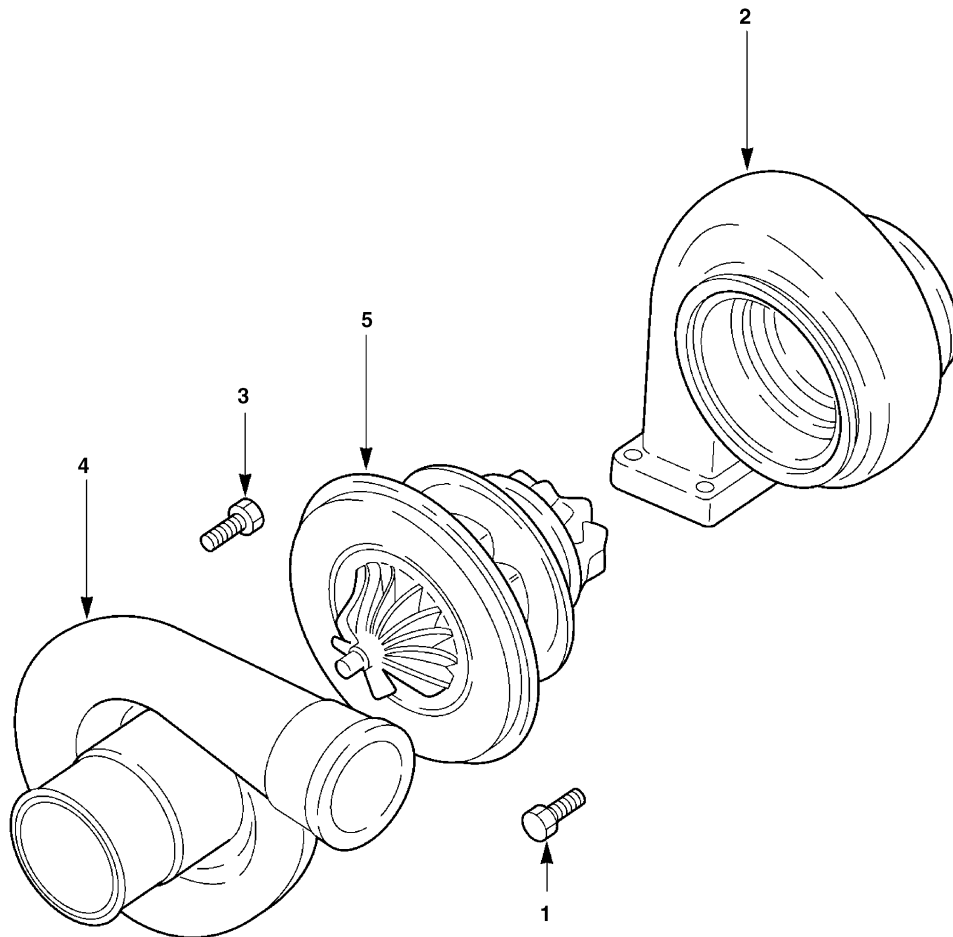
Faulty turbocharger servicing procedures can result in serious damage to pistons, valves, cylinder liners, and other important engine parts.

ISUZU does not recommend the performance of any servicing procedure not specified described in this Manual.

Contact your nearest IHI service facility to have the turbocharger assembly repaired or overhauled.

The identification plate and assembly number will be required by the service facility.

A list of IHI Turbocharger Service Network locations is given at the end of this Section.

DISASSEMBLY**Component**

N6A3603E

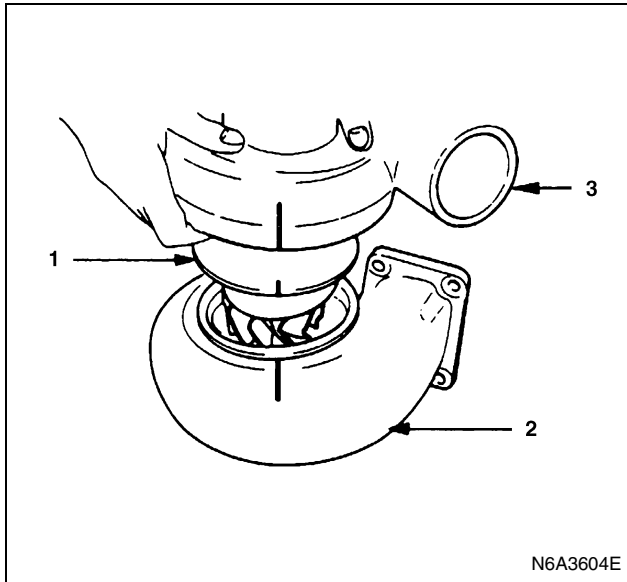
Legend

- | | |
|--------------------|---|
| 1. Bolt | 4. Compressor housing |
| 2. Turbine housing | 5. Center housing and rotating assembly |
| 3. Bolt | |

Disassembly Steps

1. Bolt

Apply a setting mark across the center housing and rotating assembly (1), the turbine housing (2), and the compressor housing (3).



2. Turbine Housing

3. Bolt

4. Compressor Housing

5. Center Housing and Rotating Assembly

1) Loosen the bolts.

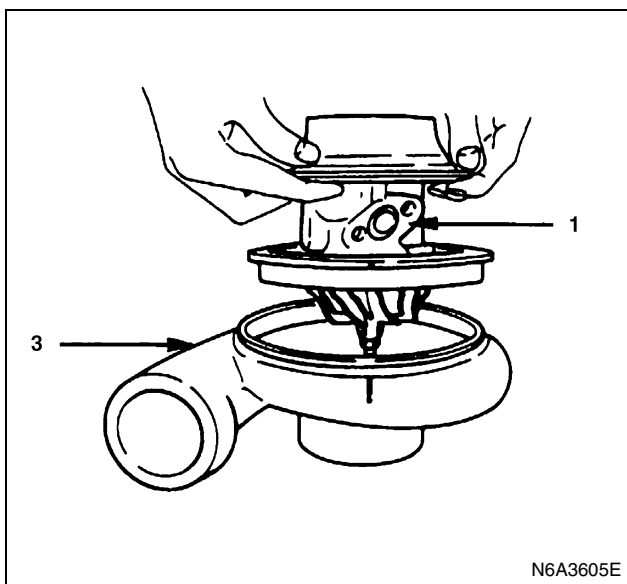
2) Disassembly the parts.

Handle the parts with extreme care.

Be particularly careful not to damage the turbine wheel blades and the compressor wheel blades. Take care not to allow foreign material to enter the center housing.

Notice:

Disassembly and servicing of the center housing and rotating assembly is not recommended.



INSPECTION AND REPAIR

Make the necessary adjustments, repairs, and part replacements if excessive wear or damage is discovered during inspection.

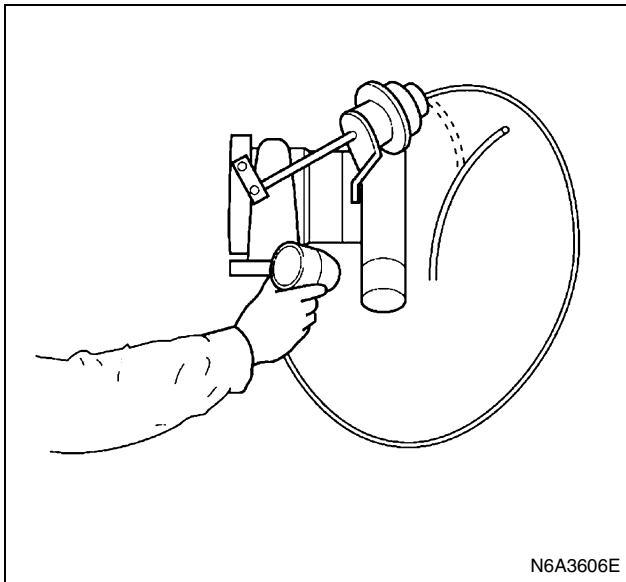
Minor servicing operations are described in this Section. Contact the nearest IHI SERVICE FACILITY for major repairs and maintenance.

Refer to "IHI SERVICE NETWORK" at the end of this Section.

Turbocharger Pressure Check

1. Remove the waste gate control chamber connecting hose.
2. Connect the pressure gauge.
3. Start the engine and gradually increase the engine speed (the vehicle must be stationary with no load applied to the engine).
4. Check to see that turbocharger pressure rises to approximately 500 mmHg.

Pressure Gauge: 5-8840-0075-0



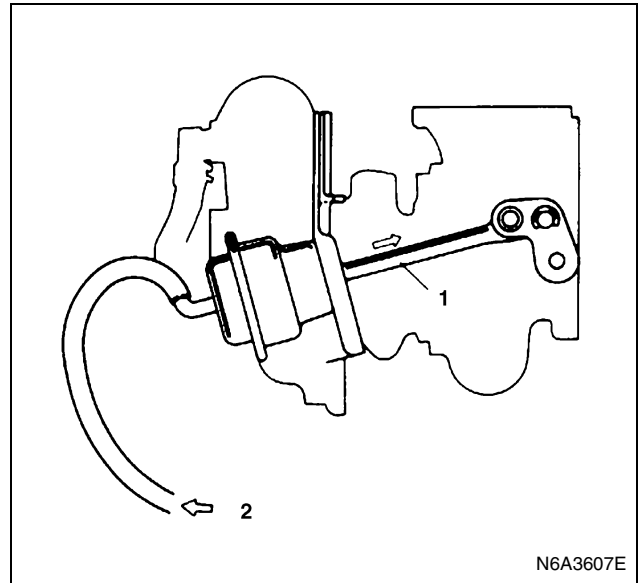
N6A3606E

Waste Gate Operation Check

1. Remove the hose between the waste gate control chamber and the intake pipe.
2. Connect the pressure gauge.
3. Check to see that the rod begins to move when a pressure of approximately 665 mmHg is applied to the waste gate, control chamber.

Notice:

Do not apply a pressure greater than 1467 mmHg (196 kPa) to the waste gate during this check.



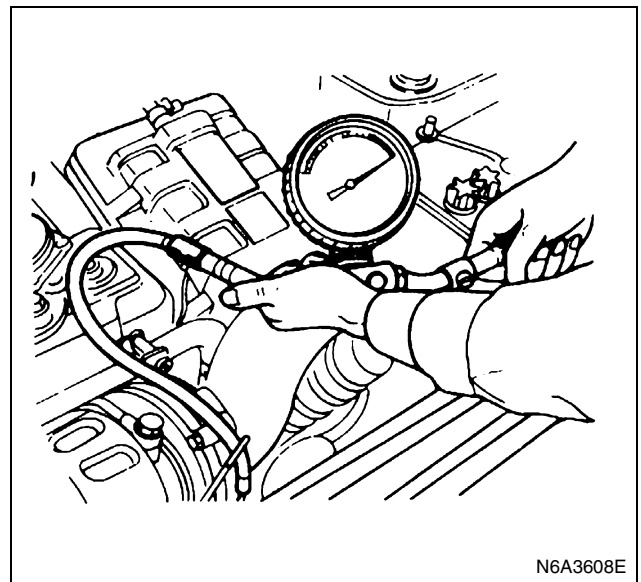
N6A3607E

Legend

1. Rod
2. Pressure

4. Check to see the pressure required to move the control rod 2 mm is within the limits shown below.

Control Rod Operating Pressure	kPa (mmHg)
4JB1-TC (IHI RHF4)	109 ± 4.4 (815 ± 33)



N6A3608E

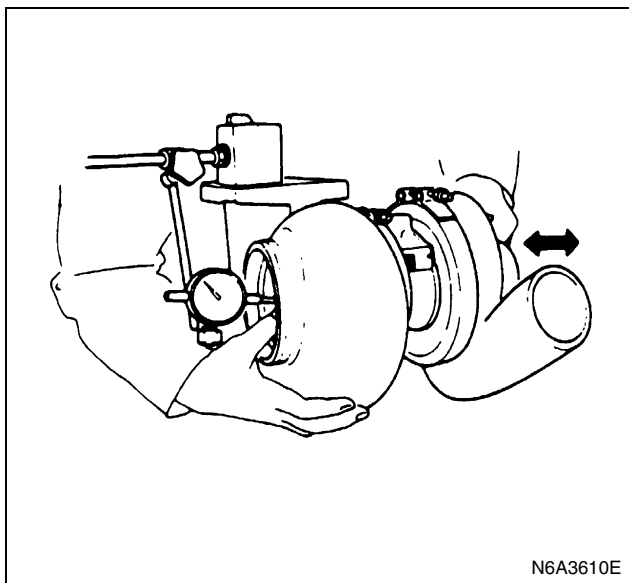
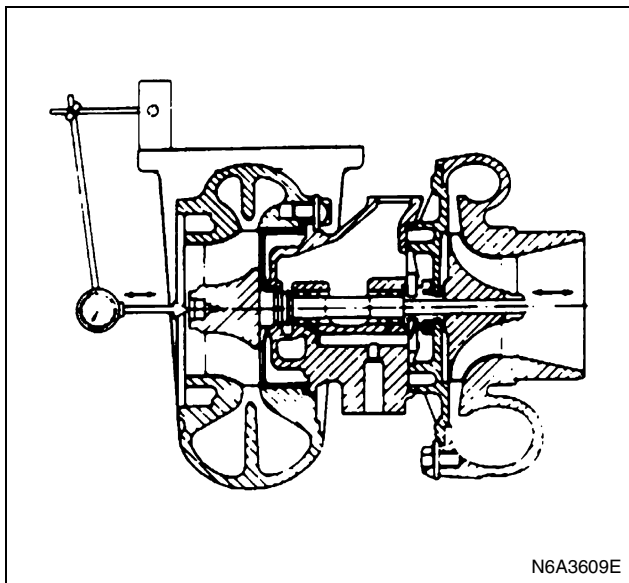
Important wheel shaft end play and bearing clearance standards and limits are included below for your reference.

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Wheel Shaft End Play

Use a dial indicator to measure the wheel shaft end play. Apply a force of 1.2 kg (2.6 lb / 11.8 N) alternately to the compressor wheel end and the turbine wheel end.

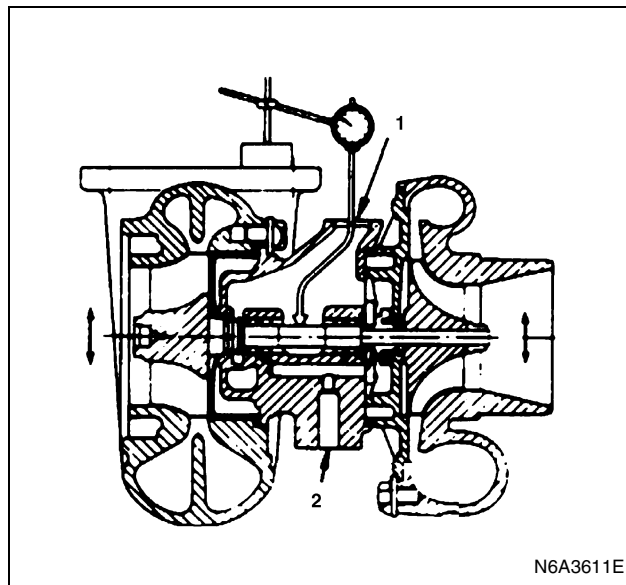
Wheel Shaft End Play		mm (in)
Standard	Limit	
0.02 — 0.08 (0.0008 — 0.0031)	0.09 (0.0035)	



Wheel Shaft and Bearing Clearance

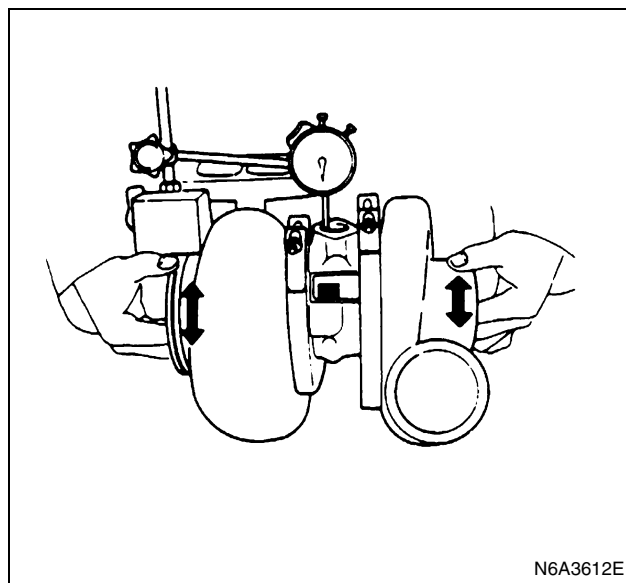
Use a dial indicator to measure the wheel shaft and bearing clearance.

Wheel Shaft and Bearing Clearance		mm (in)
Standard	Limit	
0.07 — 0.12 (0.0028 — 0.0047)	0.16 (0.0063)	



Legend

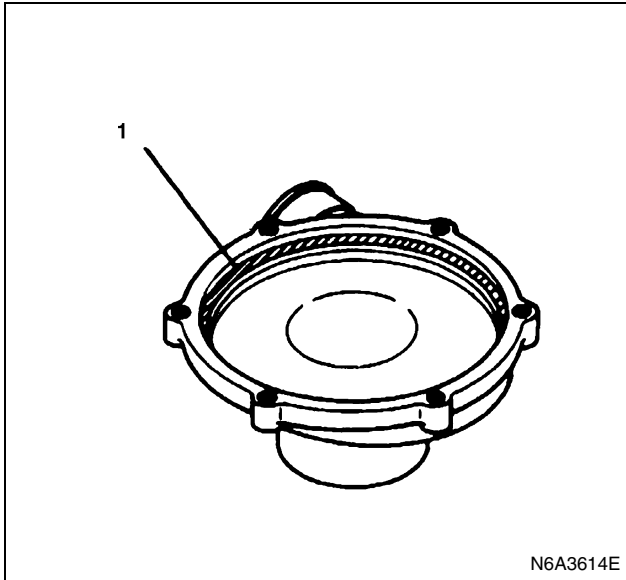
1. Oil return port
2. Oil feed port



REASSEMBLY

Reassembly Steps

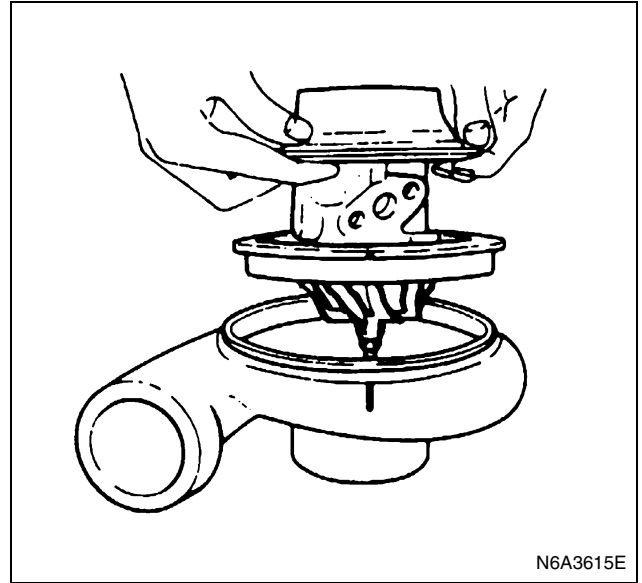
1. Center Housing and Rotating Assembly
2. Compressor Housing
3. Bolt
 - 1) Apply Threebond 1215 (1) or equivalent to flange surface of compressor housing shown in the illustration.



- 2) Align the setting marks (applied at disassembly) on the center housing and rotating assembly and the compressor housing. Handle the parts with extreme care to avoid damaging the compressor wheel blades.
- 3) Apply an anti-seizing agent (LOCTITE ANTI-SEIZE LUBRICANT or the equivalent) to the new bolt threads.
- 4) Install the new bolts to the compressor housing.
- 5) Tighten the bolts to the specified torque.

Tighten:

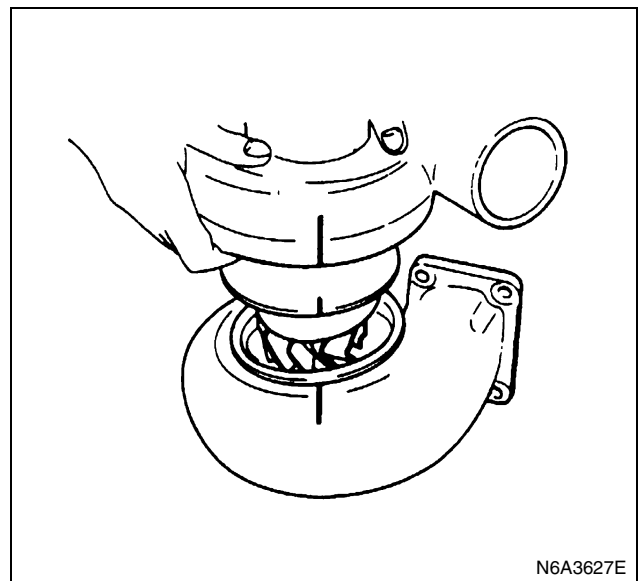
- Compressor housing bolt to 4.7 N·m (0.5 kg·m / 3.5 lb·ft)



4. Turbine Housing
5. Lock Plate and Bolt
 - 1) Align the setting marks (applied at disassembly) on the center housing and rotating assembly and the turbine housing. Handle the parts with extreme care to avoid damaging the turbine shaft wheel blade.
 - 2) Apply an anti-seizing agent (LOCTITE ANTI-SEIZE LUBRICANT or the equivalent) to the bolt.
 - 3) Tighten the bolt to the specified torque.

Tighten:

- Turbine housing bolt to 28.0 N·m (2.85 kg·m / 20.6 lb·ft)
- 4) Check that the rotating assembly turns smoothly.



IHI SERVICE NETWORK

For inquiries relating to turbochargers, please contact your ISUZU distributor or the nearest IHI Turbocharger Service Facility.

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