

**Demonstrate Inspecting and Servicing Various Bearing, Seal and Gasket Used in Heavy Equipment**

Skill Number CO-OP15GN106

Full Name: Meryana Aderia Christy No ID: 11  
 Validation Date: 27-02-2026 School: SMTN 1 Singapore

**PERFORMANCE TASK:**

Given assorted bearings, seals and gaskets, the student is requested to perform the following tasks on the components:

- Removing
- Inspection
- Installing

The student must be able to perform the following task:  
 • Demonstrate removing, inspection and installing Bearing, Seals and Gasket.  
 It is recommended that assessor put questions to student regarding the findings of their inspections and subsequent report. Literature and measuring tools will be made available but will not be provided directly to the student.  
 Safety and Contamination Control must be always applied to this process.

Prerequisite	Yes	No	N/A	Hints
The student must complete the knowledge assessment. Minimum passing grade 80%.				

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Preparation				
Prepare related literature	✓			
Prepare required equipment	✓			
Prepare related tools	✓			
Prepare Safety & Contamination Control equipment	✓			

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Perform etiquette/manner when starting the job				
Meet the customer / assessor	✓			
Perform etiquette/manner when opening the interaction.	✓			
Explain the purpose of Student's activity.	✓			
Ask permission to perform the job.	✓			

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
<b>Remove, Inspect and Install Bearings, Seals and Gaskets</b>				
1. Accessing Information	✓			
2. Bearing, Seals & Gasket Removal	✓			
3. Determine bearing reusability of bearings, seals, and gasket	✓			
4. Bearing, Seals & Gasket Installation	✓			
5. Equipment and tooling are used in the correct way	✓			
6. Equipment and tooling are cleaned and returned to its correct location	✓			
Documentation:				
Take picture if needed				

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Perform close the job by ensuring all systems or conditions is in the standard condition				
Ensure all systems or conditions are in standard condition.	✓			

**General Comments**

Tasks:  Yes  No  N/A

Observation / Hints

Perform etiquette/manner when starting the job

Meet the customer / assessor

Perform etiquette/manner when opening the interaction.

Explain the purpose of Student's activity.

Ask permission to perform the job.

RESULT:  **COMPETENT**  **NOT YET COMPETENT** (please check (v))

Student:  **Completed**  **No**  **N/A**

Remove, Inspect and Reinstall Bearings, Seals and Gaskets

1. Accessing Information

Assessor: \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_

2. Bearing, Seals Name Gasket Removal

Supervisor: \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_

3. Determine bearing reusability of bearings, seals, and gasket

4. Bearing seals & Gasket

5. Equipment and tooling are used in the correct way

6. Equipment and tooling are cleaned and returned to its original location

RESULT:  **COMPETENT**  **NOT YET COMPETENT** (please check (v))

Documentation: \_\_\_\_\_

Take picture if needed

Observation / Hints

Perform close the job by ensuring all systems or conditions is in the standard condition

Ensure all systems or conditions are in standard condition.

**General Comments**

Tasks:  Yes  No  N/A

Observation / Hints

Perform close the job by ensuring all systems or conditions is in the standard condition

Ensure all systems or conditions are in standard condition.

Page 2 of 4 Practical Assessment

CO-OP-15GN1106 - Candidate Performance Guide

**General Comments**

Tasks:  Yes  No  N/A

Observation / Hints

Perform close the job by ensuring all systems or conditions is in the standard condition

Ensure all systems or conditions are in standard condition.

Full Name: \_\_\_\_\_ No ID: \_\_\_\_\_

Validation Date: \_\_\_\_\_ School: \_\_\_\_\_

Skill Number CO-OP-15GN1106

**Demonstrate Inspecting and Servicing Various Bearings, Seal and Gasket Used in Heavy Equipment**

**PERFORMANCE TASK**

Prepare Safety & Contamination Control

Given assorted bearings, seals and gaskets the student is required to perform the following tasks on the components:

- Inspecting
- Removing
- Reinstalling
- Performing maintenance

Observation / Hints

Minimum passing grade 80%

Contamination Control must be always applied to this process.

Safety and Contamination Control must be always applied to this process.

Inspection

Preparation

Prepare related literature

Prepare required equipment

Prepare Safety & Contamination Control

Prepare related tools

Remove the components

Inspect the components

Reinstall the components

Perform maintenance

Observation / Hints

Prepare Safety & Contamination Control

Given assorted bearings, seals and gaskets the student is required to perform the following tasks on the components:

- Inspecting
- Removing
- Reinstalling
- Performing maintenance

Observation / Hints

Minimum passing grade 80%

Contamination Control must be always applied to this process.

Safety and Contamination Control must be always applied to this process.

Inspection

Preparation

Prepare related literature

Prepare required equipment

Prepare Safety & Contamination Control

Prepare related tools

Remove the components

Inspect the components

Reinstall the components

Perform maintenance

Reporting	Completed			Observation / Hints
	Yes	No	N/A	
All relevant documentation completed correctly and approved by customer (if required).				

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Safety				
Using APD related to the job	✓			
Follows relevant Workplace Safety Guidelines (LOTO, Safety Equipment)	✓			
State and follow Safety Precautions	✓			
Service man completes job without accident due to incorrect procedure using hand tools.	✓			
Tasks completed without damage equipment and tools	✓			

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Contamination Control				
Environmental Practices & Housekeeping				

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Perform etiquette/manner after completing the job				
Perform etiquette/manner when closing the communication.				

General Comments

pelajari kembali lebih detail macam-macam seal dan fungsinya.

RESULT:

COMPETENT

NOT YET COMPETENT

(please check 'N')

Student:

Name: MERRYAND

Date: 27-02-2026

Signature: 

Assessor:

Name: Selisawan

Date: 27-02-2026

Signature: 

Supervisor:

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Date Recorded:

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



**Demonstrate Inspecting and Servicing Various Bearing, Seal and Gasket Used in Heavy Equipment**

Skill Number CO-OP15GN106

Full Name: ~~XXXX~~ **Merryorn Aderna Chisty**

No. ID: **11**

Validation Date: **27 - FEBRUARI - 2026**

School: **JMFTN I JUNGROCI**

**PERFORMANCE TASK:**

Given assorted bearings, seals and gaskets, the student is requested to perform the following tasks on the components:

- Removing
- Inspection
- Installing

The student must be able to perform the following task:

- Demonstrate removing, inspection and installing Bearing, Seals and Gasket.

It is recommended that assessor put questions to student regarding the findings of their inspections and subsequent report. Literature and measuring tools will be made available but will not be provided directly to the student. Safety and Contamination Control must be always applied to this process.

Prerequisite	Yes	No	N/A	Hints
The student must complete the knowledge assessment. Minimum passing grade 80%.	✓			Score seal, bearing, gasket course or subject.

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Preparation				
Prepare related literature	✓			Observe if the candidate is referring to the Manufacturer's Literature
Prepare required equipment	✓			Observe if the candidate is preparing bearings, seals, and gaskets
Prepare related tools	✓			Observe if the candidate is preparing related tools (e.g.: Hand tools, bearing puller, Bearing heater, Infrared Thermometer, etc.)
Prepare Safety & Contamination Control equipment	✓			Observe if the candidate is preparing related Safety & CC Equipment (e.g.: PPE, Blue Towel, Plastic Wrap, etc.)

Tasks	Completed			Observation
	Yes	No	N/A	
Perform etiquette/manner when starting the job				
Meet the customer / assessor	✓			
Perform etiquette/manner when opening the interaction.	✓			• Perform smile & interaction. • Introduce Student
Explain the purpose of Student's activity.	✓			
Ask permission to perform the job.	✓			

Tasks	Completed			Observation / Hint
	Yes	No	N/A	
<b>Remove, inspect and install Bearings, Seals and Gaskets</b>				
1. Accessing Information	✓			Observe if the candidate is access information relating task from manufacturer literature
2. Bearing, Seals & Gasket Removal	✓			Observe if the candidate is remove seals and gasket following instructor manufacturer's literature
3. Determine bearing reusability of bearings, seals, and gasket	✓			Observe if the candidate is inspect seals and gasket following in manufacturer's literature
4. Bearing, Seals & Gasket Installation	✓			Observe if the candidate is install seals and gasket following in manufacturer's literature
5. Equipment and tooling are used in the correct way	✓			
6. Equipment and tooling are cleaned and returned to its correct location	✓			
<b>Documentation:</b>				
Take picture if needed	✓			



Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Perform close the job by ensuring all systems or conditions is in the standard condition	✓			<ul style="list-style-type: none"> <li>Find the improper condition.</li> <li>Communicate the finding to the customer/assessor.</li> </ul>
Ensure all systems or conditions are in standard condition.	✓			

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
All relevant documentation completed correctly and approved by customer (if required).	✓			<ul style="list-style-type: none"> <li>Completing the Task List</li> <li>Completing Measurement Form/Related Check Sheet, if required</li> <li>Create Service Report (SIMS), if required</li> <li>Create SPR, if required</li> <li>Documenting the failed or damaged parts, if required</li> <li>Provide Technical Analysis Report/Failure Analysis Report, if required.</li> </ul>

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Safety	✓			
Using APD related to the job	✓			
Follows relevant Workplace Safety Guidelines (LOTO, Safety Equipment)	✓			<ul style="list-style-type: none"> <li>Comply with safety regulation that applied on the workplace</li> </ul>
State and follow Safety Precautions	✓			<ul style="list-style-type: none"> <li>Create Job Safety Analysis</li> <li>Student must follow safety procedure refer to service manual or SIS related to job</li> </ul>
Service man completes job without accident due to incorrect procedure using hand tools.	✓			<ul style="list-style-type: none"> <li>Correct working position</li> <li>Correct hand tool related to the job</li> </ul>
Tasks completed without damage equipment and tools	✓			

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Environmental Practices & Housekeeping	✓			<ol style="list-style-type: none"> <li>Waste is minimized, waste including sludge, solids and wastes are sorted and store recycling or disposal</li> <li>Packaging of goods received and reused or disposed of</li> <li>Materials that can be reused cleaned and stored</li> <li>Waste and scrap are removed following workplace procedure</li> <li>All fluids are disposed of in accordance with enterprise policies and procedures</li> </ol>

Tasks	Completed			Observation / Hints
	Yes	No	N/A	
Perform etiquette/manner after completing the job				
Perform etiquette/manner when closing the communication.				<ul style="list-style-type: none"> <li>Perform smile &amp; greet</li> <li>Ask permission to the interaction.</li> </ul>



General Comments

RESULT:  COMPETENT  NOT YET COMPETENT (please check (N))

Student: MERYANO Name 27-02-2026 Date

Signature [Signature]

Assessor: M. Ruslan Name 27-02-2026 Date

Signature [Signature]

Supervisor: Name \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_

Data Recorded: Name \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_



**ANALISIS LINGKUNGAN KESELAMATAN KERJA / JOB SAFETY ENVIRONMENT ANALYSIS**

Pekerjaan Task	DA Turbocharger	Nomor JSEA JSEA Number	Halaman Page	Dari Of
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Tanggal Pembuatan JSEA Date of JSEA	25-02-2026	Departemen Dept	Tempat Kerja Work Location	WORKSHOP
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Disusun Oleh Compiled By	Merryana	TTD Sign	Review Oleh Reviewed By	TTD Sign	Atasan Superior	TTD Sign
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Apakah Anda sudah terlatih untuk melakukan pekerjaan ini ? / Are you properly trained to complete these task ?  Ya / Yes  Tidak / No

Apakah Anda memerlukan peralatan LOTO ? / Are you need LOTO Equipments ?  Ya / Yes  Tidak / No

Apakah Anda mengetahui ERP/MERP dari pekerjaan yang sedang dilakukan?  Ya / Yes  Tidak / No *Jika tidak, silahkan tambahkan dalam urutan langkah tugas di awal*

Kondisi Lingkungan / Environmental Conditions	Cuaca / Weather	Mendung	Medan / Terrain	Rata
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Pengendalian Sumber Bahaya / Hazardous Energy Control	<input type="checkbox"/> Listrik / Electrical	<input checked="" type="checkbox"/> Gravitasi (Benda jatuh,terimpa) / Gravitation (Falling objects, struck down)	<input type="checkbox"/> Pneumatik / Pneumatic
	<input type="checkbox"/> Hidraulik / Hydraulic	<input checked="" type="checkbox"/> Mekanis / Mechanical	<input type="checkbox"/> Panas / Thermal

APD yang diperlukan Required PPE	<input checked="" type="checkbox"/> Helm / Safety Helm	<input type="checkbox"/> Pelindung Muka / Face shield	<input checked="" type="checkbox"/> Kacamata / Safety Glass
	<input checked="" type="checkbox"/> Sarung Tangan / Hand Gloves	<input type="checkbox"/> Pelindung Pernafasan / Respiratory Protection	<input type="checkbox"/> Perlindungan Kejatuhan / Fall Protection
	<input checked="" type="checkbox"/> Sepatu / Safety Shoes	<input type="checkbox"/> Pelindung Telinga / Hearing Protection	<input type="checkbox"/> Lain-Lain / Other .....

Hal yang perlu dipertimbangkan dalam mengidentifikasi bahaya / These to consider in identify hazards :

1 Bahaya Keselamatan : Kondisi tidak aman yang dapat menyebabkan injury atau kematian seperti terpelesek/terjatuh, tertimpa dll.  
Safety Hazard : unsafe conditions that can cause injury or even death, such as spill/falls, pinch point, struck by, etc.

2 Bahaya Fisik : Listrik, Api/ledakan, Kebisingan, Radiasi, Panas, Tekanan, Terjepit, Tersandung/Terjatuh, Terimpa, Cetarau.  
Physical Hazards : Electrical, Fire/Explosion, Noise, Radiations, Thermal, Pressure, Pinch Point, Slips/Falls, Struck by, Vibration.

3 Bahaya Kimia : Terhirup, terkena kulit, injeksi, tertelan, terserap.  
Chemical Hazards : Inhalation, skin contact, injection, ingestion, absorption.

4 Bahaya Biologi : Patogen yang ditularkan melalui darah, jamur, tanaman/serangga/hewan.  
Biological Hazards : bloodborne pathogens, mold, Plant/Insect/Animals

5 Bahaya Ergonomi : Gerakan berulang-ulang, beban yang berlebihan, Postur Janggal, Durasi kerja, Desain area kerja.  
Ergonomic Hazards : Repetitions, Forcefull extention, Awkward Posture, Duration, Work area desain.

6 Bahaya Organisasi : stres atau bahaya terkait dengan masalah tempat kerja yang menyebabkan efek jangka panjang atau pendek, beban kerja yang berat dan kekerasan ditempat kerja.  
Organizational hazards : stressors or hazards associated with workplace issues that cause long or short term effects heavy workloads, stressful interactions and workplaces violence.

No	Urutan Dasar Langkah Tugas / Job Steps (* Maksimum 15 Langkah / Maximum 15 Steps)	Bahaya Yang Terkait / Potential Hazard(s)	Tindakan Perbaikan / Recommended Action
1.	Walk Around inspection	1.1. Area kerja kotor 1.2. Tersandung kordus 1.3 Oli tercecer	1.1.1 merapikan kursi yang berserakan 1.2.1 merapikan kordus yang berserakan 1.3.1 mengelap Oli menggunakan absorbant pad.
2.	prepare tools	2.1 tertabrak rak tool box 2.2 kontak fisik pada tool 2.2	2.1.1 memastikan rak tool box terkunci
3.	Disassemble turbocharger	3.1 tangan terjepit saat melepas komponen 3.2 tangan tertimpa turbin 3.3. tangan tergores komponen 3.4 fastener terontai 3.5 terjepit saat mengambil fastener	3.1 menggunakan safety gloves 3.2.jbberhati-hati saat pengangkatan 3.2.2 tidak bergurau 3.3.1 menggunakan safety gloves 3.4.1 menggunakan safety glass 3.5.1 menggunakan retaining player
4.	Assembly turbocharger	4.1 tangan tergores saat memasang komponen 4.2.	
5.	Housekeeping	5.1 saraf terjepit saat mengangkat kawat	5.1 ambil posisi dengan benar 5.2 mengangkat komponen 2 orang





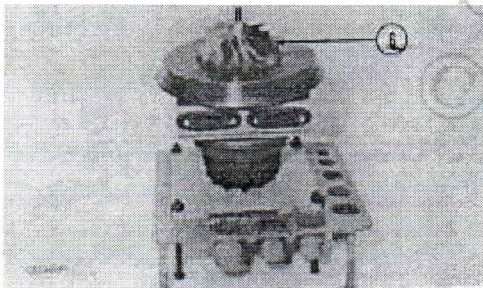


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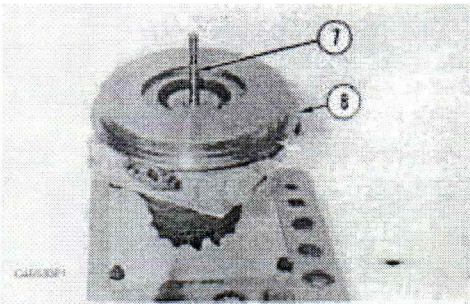
**When the nut is loosened, do not put a side force on the shaft.  
This can result in a bent shaft.**

**NOTE:** When assembling, put a small amount of clean engine oil on the turbine shaft threads and compressor wheel face that makes contact with the nut. Install the nut. Tighten the nut to a torque of **17 N·m (13 lb ft)** to push compressor wheel (6) on the shaft. Loosen the nut and tighten again to a torque of **3.5 N·m (30 lb in)**. Tighten the nut an additional 120° of a turn. Remove the nut from the turbine shaft. Put **6V1542 Quick Cure Primer** on the threads of the turbine shaft and nut.

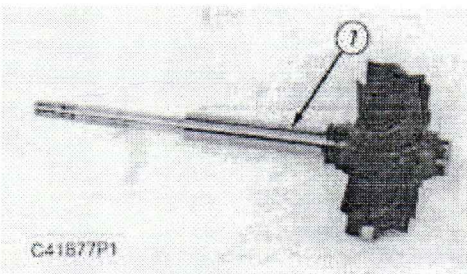
Put **9S3265 Retaining compound** on the threads of the shaft and nut. Install the nut. Tighten the nut to a torque of **3.5 N·m (30 lb in)**. Tighten the nut an additional 120° of a turn.



6. Remove compressor wheel (6).

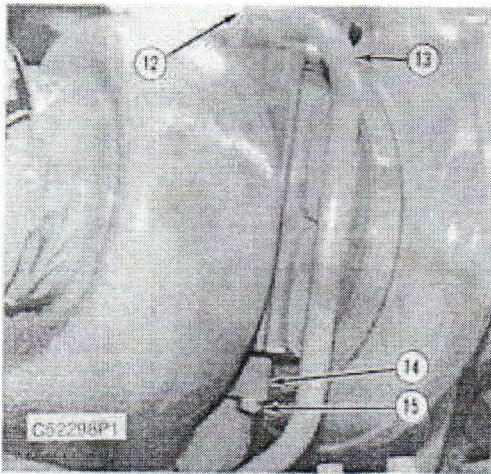


7. Remove backplate assembly (8) from shaft assembly (7).



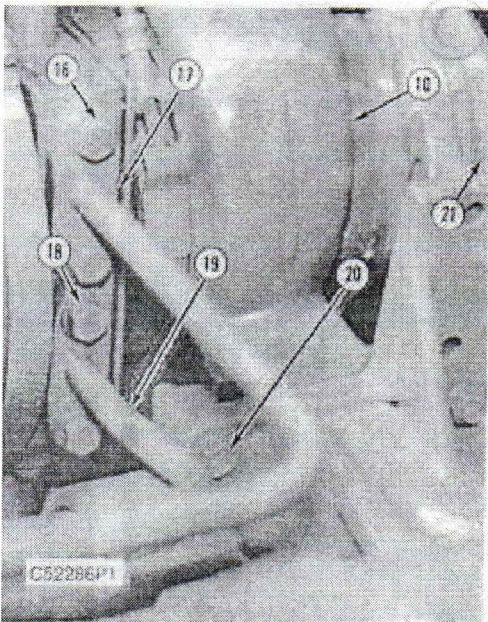
8. Inspect shaft assembly (7) for wear or damage. Replace if necessary.





**10.** Remove two bolts (12), loosen the connector on oil tube (13) and remove oil tube. Remove the gasket. Check gasket for wear or damage. Replace if necessary.

**11.** Remove two bolts (15). Remove oil tube (14). Remove the gasket and the seal. Check gasket and seal for wear or damage. Replace if necessary.



**12.** Remove two bolts and washers. Remove adapter (21).

**13.** Remove two bolts (16) and washers to disconnect tube assembly (17). Remove the gasket. Check for wear or damage. Replace if necessary.

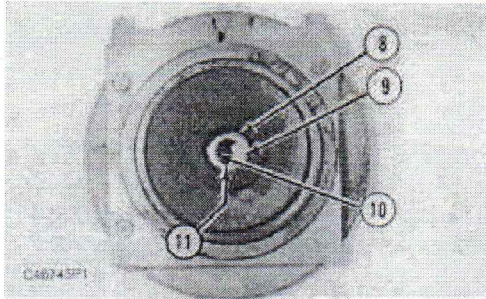
**14.** Remove two bolts (18) and washers to disconnect tube assembly (19). Remove the gasket. Check for wear or damage. Replace if necessary.

**15.** Remove four bolts (20). Remove turbocharger (10) and gasket. Check for wear or damage. Replace if necessary. The weight of the turbocharger is **20 kg (45 lb)**.

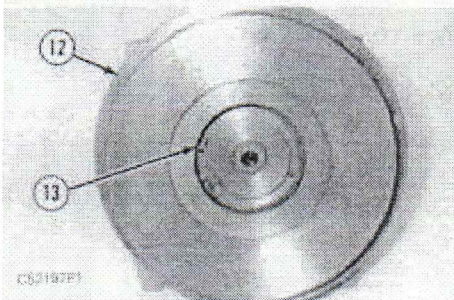
**NOTE:** For installation of the turbocharger, reverse the removal steps.

## Disassemble & Assemble Turbocharger



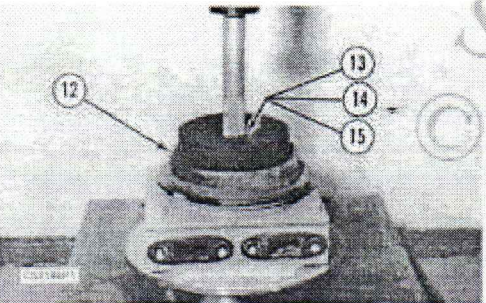


9. Remove retaining ring (8), bushing (9), two retaining rings (10) and bushing (11) (not shown).



10. Turn backplate assembly (12) 180°.

11. Remove retaining ring (13).



12. Put backplate assembly (12) in a press as shown.

13. Press out spacer (13) (not shown), collar (14) (not shown) and hub (15) (not shown).

**NOTE:** When installing, place spacer (13) and collar (14) in position inside backplate (12). Lower the temperature of hub (15). Install the hub.

**NOTE:** For assembly of the turbocharger, reverse the disassembly steps.

14. When backplate assembly (12) and compressor wheel (6) have been assembled on shaft assembly (7) and the nut has been installed to the proper torque, place Tool (E) in position on backplate (12). Check the shaft end play. The shaft end play must be **0.08 mm (.003 in)**. The shaft end play must not exceed **0.25 mm (.010 in)**.

End By:

a. install turbocharger

PCP-00022950

2026/02/25

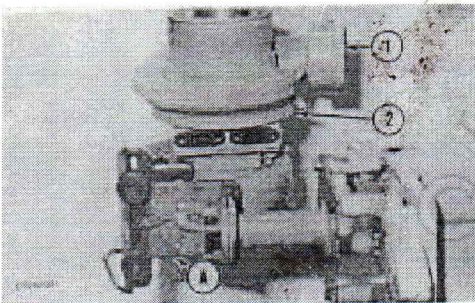
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Tools Needed		A	B	C	D	E
9S6363	Turbocharger Fixture Group	1				
9S6343	Fixture Assembly		1			
8S9943	Turbine Holder			1		
5S9566	Sliding T-Wrench				1	
8S2328	Dial Indicator Test Group					1

Start By:

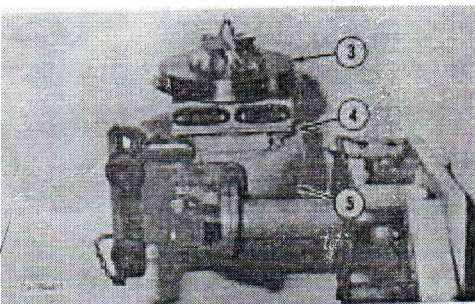
a. remove turbocharger



1. Install turbocharger on Tool (A).

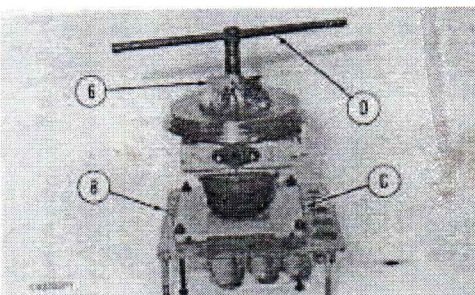
**NOTE:** Place alignment marks on the three housings of the turbocharger for correct installation and alignment at assembly.

2. Remove "V" clamp (2) and compressor housing (1).



3. Remove "V" clamp (4).

4. Remove cartridge housing (3) from turbine housing (5).



5. Install Tool (C) in Tool (B). Put the cartridge assembly in Tool (C) as shown. Use Tool (D) to remove the nut that holds the compressor wheel (6).

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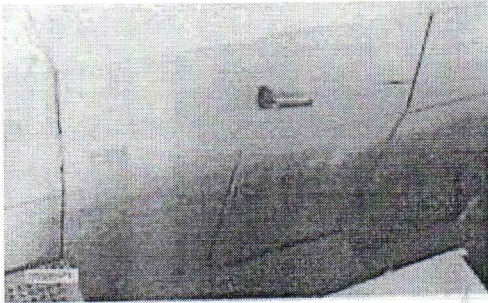


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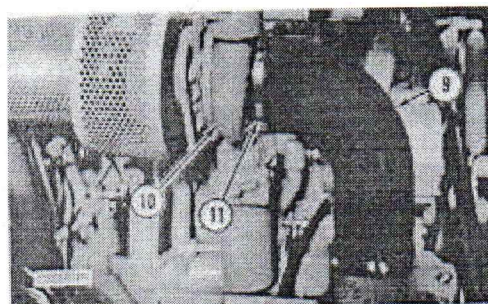
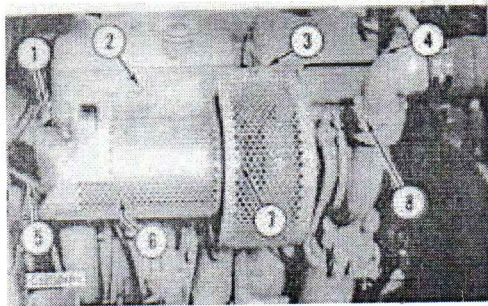
## Turbocharger (SENR5563)

SMCS - 1052

## Remove &amp; Install Turbocharger



1. Open the engine compartment hood and doors.



2. Remove eight bolts (2) and washers. Remove turbocharger guard (3).
3. Loosen two bolts (1).
4. Slide clamp assembly (5) off tube assembly (6) (not shown).
5. Loosen clamp (7). Remove tube assembly (6) (not shown).
6. Remove two bolts (8).
7. Disconnect pipe assembly (4). Check the O-ring on pipe assembly for wear or damage. Replace if necessary.
8. Loosen hose clamp (11).
9. Disconnect hose (9) from turbocharger (10). Plug the opening in the turbocharger.

