

Demonstrate Carrying Out Jacking, Blocking and Lifting of Heavy Equipment and Components Safely

Skill Number CO-OP15GN108

Full Name: Yuda Adi Rahma SNISAP ID: _____
 Job Title: Repositioning 3508 Branch/Area: _____

PERFORMANCE TASK:

Given a large machine component, the necessary lifting equipment and lifting chains/straps, the student is to lift and move the component from one location to another. The component is to be correctly supported once placed on the ground or workbench. The component is to be supported in a manner that will enable service work to be carried out.

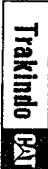
The student must be able to:

- Selecting tools used and identify SWL correctly
- Jack and block Heavy Equipment correctly and safely
- Lift and support engine or machine component correctly
- Follow service procedure on Service Manual correctly
- Perform standard safety & contamination control procedure related to the job
- Perform communication & etiquette manner

Students are to be given a copy of TCI 005 Practical Activity 2 - Student Performance sheet and fill out appropriate areas. It is recommended that Facilitators put questions to students regarding the findings of their inspections and subsequent report. The student will also be required to complete relevant workplace documentation and is to observe the correct safety procedures at all times.

Safety and Contamination Control must be applied to this process at all times.

The Student must complete the knowledge assessment	✓			
Minimum passing grade 80%.				



Prepare	Prepare related literature Work instructions are used to determine job requirements, including method, process and equipment	✓			
Job specifications	Job specifications are read and interpreted. Information is accessed from manufacturer/ component supplier specifications and correctly incorporated.	✓			
Information accessed	Information is accessed from manufacturer/ component supplier specifications and correctly incorporated	✓			
Prepare required equipment	Prepare required equipment	✓			
Prepare related tools	Materials, components, equipment and tooling are identified and checked for safe and effective operation	✓			
Prepare Safety & Contamination Control equipment	Prepare Safety & Contamination Control equipment	✓			

Perform	Perform standard safety & contamination control procedure related to the job	✓			
Meet the customer / assessor	Meet the customer / assessor	✓			
Perform etiquette/manner	Perform etiquette/manner when opening the interlock.	✓			
Explain the purpose of Student's activity.	Explain the purpose of Student's activity.	✓			
Ask permission to perform the job.	Ask permission to perform the job.	✓			



Visual Check					
Pre-inspection procedures	✓				
Cranelifting apparatus inspection	✓				
Lifting equipment	✓				
Support materials	✓				

Visual Check					
Site location selected	✓				
Supports in place	✓				
Jacking and Blocking					
Jacking procedures	✓				
Jack conducted	✓				
Blocking procedure	✓				
Blocking conducted	✓				
Blocking allows for service work to be conducted	✓				
Lifting					
Hook up procedures	✓				
Lift conducted	✓				
Load moved to chosen site	✓				
Load lowered and supported	✓				
Support allows for service work to be conducted	✓				

Use of Tools and Equipment					
Tests and adjustments carried out according to manufacturer's specifications and procedures	✓				
Service is completed without damage to equipment and tools	✓				
Equipment and tooling is cleaned and returned to its correct location	✓				
Work area left clean and tidy	✓				

Reporting					
All relevant documentation completed correctly, and approved by customer (if required).	✓				

Safety					
Using PPE related to the job	✓				
Follows relevant Workplace Safety Guidelines (LOTO, Safety Equipment)	✓				
State and follow Safety Precautions	✓				
Student completes job without accident due to incorrect procedure using hand tools.	✓				
Tasks completed without damage equipment and tools	✓				

Coordination					
Environmental Practices & Housekeeping	✓				

Perform etiquette in a manner when closing the communication.	✓				
---	---	--	--	--	--

General Comments

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

Service man: Guida Adi P. Name 13/12/2015 Date  Signature

Assessor: Shivani Name 13/12/2015 Date  Signature

Supervisor: _____ Name _____ Date _____ Signature _____

Data Recorded: _____ Name _____ Date _____ Signature _____



Demonstrate Carrying Out Jacking, Blocking and Lifting of Heavy Equipment and Components Safely

3508

Skill Number CO-OP15GN108

Full Name:

Yuda Adli

SNSAP ID:

Job Title:

Positioning 3508

Branch/Area:

PERFORMANCE TASK:

Given a large machine component, the necessary lifting equipment and lifting chains/slings, the student is to lift and move the component from one location to another. The component is to be correctly supported once placed on the ground or workbench. The component is to be supported in a manner that will enable service work to be carried out.

The student must be able to:

- Selecting tools used and identify SWL correctly
- Jack and block Heavy Equipment correctly and safely
- Lift and support engine or machine component correctly
- Follow service procedure on Service Manual correctly
- Follow standard safety & contamination control procedure related to the job
- Perform communication & etiquette manner

Students are to be given a copy of TCI.005 Practical Activity 2 – Student Performance sheet and fill out appropriate areas. It is recommended that Facilitators put questions to students regarding the findings of their inspections and subsequent report. The student will also be required to complete relevant workplace documentation and is to observe the correct safety procedures at all times

Safety and Contamination Control must be applied to this process at all times.

The Student must complete the knowledge assessment. Minimum passing grade 80%.	80%	✓	Score Jacking, Blocking, and lifting course or subject.
--	-----	---	---

Preparation	Observation	Practical Activity 1 Worksheet
Prepare related literature Work Instructions are used to determine job requirements, Including method, process and equipment Job specifications are read and interpreted. Information is accessed from manufacturer/ component supplier specifications and correctly incorporated. Information is accessed from manufacturer/ component supplier specifications and correctly incorporated	✓	Observe if candidate is referring to Manufacturer's specifications and/ or service intervals. Observe if candidate is referring to and observing Manufacturer's specifications and/or service intervals
Prepare required equipment	✓	
Prepare related tools Materials, components, equipment and tooling are identified and checked for sale and effective operation	✓	Refer to MOD resources list. Material, components, tooling and equipment to complete work are identified, selected and prepared in accordance with site procedures
Prepare Safety & Contamination Control equipment	✓	

Performance	Observation
Perform etiquette/manner when landing the job	Observation
Meet the customer / assessor	✓
Perform etiquette/manner when opening the interaction.	✓
Explain the purpose of Student's activity.	✓
Ask permission to perform the job.	✓

Inspection Item	Competence	Observation Points
Visual Check		
Pre-inspection procedures	✓	Location of site to move component, personnel in the area, support material available at site
Cranelifting apparatus inspection	✓	Inspection of crane or lifting apparatus
Lifting equipment	✓	Inspection of chainslings or other lifting apparatus.
Support materials	✓	Serviceable and will complete the task safely.

Inspection Item	Competence	Observation Points
Visual Check		
Site location selected	✓	Safe and secure area, will not affect other Personnel
Supports in place	✓	Tail rope, if required
Jacking and Blocking		
Jacking procedures	✓	Type of load, center of gravity, jacking points, SWL, equipment and jacking tool, area ideal for jacking procedure.
Jack conducted	✓	Jack in correct position
Blocking procedure	✓	Type of blocking that use, SWL, Blocking points.
Blocking conducted	✓	Lowered correctly, supports in place, load secured and not moving once placed on ground or bench, jacking tool removed and moved out of the way
Blocking allows for service work to be conducted	✓	Job supported to allow work to be conducted.
Lifting		
Hook up procedures	✓	Check as per 10 steps of safe lifting in Student/Facilitator Guide, type of load, center of gravity, hook up points, hook up

Lift conducted	✓	points checked, position of hooks, hook-up secure.
Load moved to chosen site	✓	Checked security of hook up points, load lifted slightly, check center of gravity, slings not twisted, knined, binding, easy lift and not jerky, lift straight up and down - no angle on crane
Load lowered and supported	✓	Minimum distance off the ground to complete task, other personnel considered, swaying of the load controlled.
Support allows for service work to be conducted	✓	Lowered correctly, supports in place, load secured and not moving once placed on ground or bench, lifting tackle removed and moved out of the way
		Job supported to allow work to be conducted.
		Use of Tools and Equipment

Inspection Item	Competence	Observation Points
Use of Tools and Equipment		
Tests and adjustments carried out according to manufacturer's specifications and procedures	✓	
Service is completed without damage to equipment and tools	✓	Tooling is checked for serviceability and reported if found unserviceable
Equipment and tooling is cleaned and returned to its correct location	✓	Unserviceable equipment and/or tooling is tagged and faults identified in accordance with workshop requirements
Work area left clean and tidy	✓	

Reporting	✓			
All relevant documentation completed correctly, and approved by customer (if required).	✓			<ul style="list-style-type: none"> • Completing the Task List • Completing Measurement Form/Related Check Sheet, if required • Create Service Report (SMS), if required • Create SPR, if required • Documenting the failed or damaged parts, if required • Provide Technical Analysis Report/Failure Analysis Report, if required.

Safety	✓			
Using PPE related to the job	✓			<ul style="list-style-type: none"> • Comply with safety regulation that applied on the workplace
Follows relevant Workplace Safety Guidelines (LOTO, Safety Equipment)	✓			<ul style="list-style-type: none"> • Create Job Safety Analysis • Student must follow safety procedure refer to service manual or SIS related to job
State and follow Safety Precautions	✓			<ul style="list-style-type: none"> • Correct working position • Correct hand tool related to the job
Student completes job without accident due to incorrect procedure using hand tools.	✓			
Tasks completed without damage equipment and tools	✓			

Contamination Control	✓			
Environmental Practices & Housekeeping	✓			<ol style="list-style-type: none"> 1. Waste is minimized, waste material, including sludge, solids and other wastes are sorted and stored in bins for recycling or disposal 2. Packaging of goods received is sorted and reused or disposed of by recycling 3. Materials that can be reused are cleaned and stored 4. Waste and scrap is removed following workplace procedures 5. All fluids are disposed of in accordance with enterprise policies and procedures

Perform etiquette/manner when completing the job	✓			
Perform etiquette/manner when dosing the communication.	✓			<ul style="list-style-type: none"> • Perform smile & greetings. • Ask permission to leave or end the interaction.

General Comments

Rahatikan prosedur safety,
dan prosedur pengangkutan
yang benar.

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

Serviceman: Tida Adi P. 13/12/2025
Name Date Signature

Assessor: Shiana TB 13/11/25
Name Date Signature


Supervisor: _____
Name Date Signature

Data Recorded: _____
Name Date Signature

ANALISIS LINGKUNGAN KESELAMATAN KERJA / JOB SAFETY ENVIRONMENT ANALYSIS

Pekerjaan / Task	Linting Crankshaft 3508	Nomor JSEA / JSEA Number	Halaman / Page	1	Dari / Of	2
------------------	-------------------------	--------------------------	----------------	---	-----------	---

Tanggal Pembuatan JSEA / Date of JSEA	13 Desember 2025	Departemen / Dept	Service	Tempat Kerja / Work Location	Workshop TAB
---------------------------------------	------------------	-------------------	---------	------------------------------	--------------

Disusun Oleh / Compiled By	Yuda Adi P.	TTD / Sign		Review Oleh / Reviewed By	SHE	TTD / Sign		Alasan Superior		TTD / Sign	
----------------------------	-------------	------------	---	---------------------------	-----	------------	--	-----------------	--	------------	--

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 diawal*

Kondisi Lingkungan / Environmental Conditions	Normal	Cuaca / Weather	Cerah	Medan / Terrain	Rata
---	--------	-----------------	-------	-----------------	------

Pengendalian Sumber Bahaya / Hazardous Energy Control	<input type="checkbox"/> Listrik / Electrical	<input checked="" type="checkbox"/> Gravitasi (Benda jatuh, tertimpa) / Gravitation (Falling objects, struck down)	<input type="checkbox"/> Pneumatik / Pneumatic
	<input type="checkbox"/> Hidraulik / Hydraulic	<input 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 :

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

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

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

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

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.

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
A ERP/MERP			
1.	Saat pekerjaan terjadi gempa	tertimpa reruntuhan	1.1 Segera evakuasi menuju master point baru ditetapkan/ tempat terbuka 1.2 Melaporkan kejadian kepada atasan
2.	Saat pekerjaan ada teknisi yang pingsan	Cidera kepala, tangan tergores	2.1 Lakukan protokol P3K 2.2 Segera evakuasi korban menuju fasilitas kesehatan terdekat 2.3 Melaporkan kejadian kepada atasan
B Langkah Pekerjaan			
1.	Walk Around Inspection	Tersandung Komponen	1.2 Merapikan Komponen 1.2 Pastikan Jalur Uifting tidak ada komponen lain 1.3 Gunakan Safety Shoes
2.	Prepare Tools	Terpelepat Lantai Pemegangan Tool yang Salah Tertimpa Tools	1.4 Sapu/Pel Lantai sehingga bersih 2.1 Pastikan kontak fisik pada Tool sudah benar 2.3 Gunakan Safety Gloves yang sesuai 2.4 Tetap Fokus saat bekerja 2.5 Gunakan Safety Helmet 2.6 Perhatikan lingkungan sekitar 2.7 Periksa Tools dengan seksama
3.	Doing Lifting & Moving Crankshaft 3508	Terjepit Komponen Bahaya Ergonomi Saat lifting Terbenhur Komponen	3.1 Perhatikan Kontak Fintk saat pengangkatan 3.2 Hindari Titik Jepit 3.3 Lakukan Uifting dengan postur yang benar & nyaman 5.4 Perhatikan lingkungan sekitar

05/09/2017

Crankshaft - Remove (SENR6564-32)

SMCS - 1202

107163498

Removal Procedure

Table 1

Required Tools		
Tool	Part Number	Part Description Qty
A	4C-9832	Engine Rollover Stand 1
B	439-3941	Link Bracket 2

Start By:

- Remove the rocker shaft assemblies and the pushrods. Refer to Disassembly and Assembly, "Rocker Shaft and Push Rods - Remove".
- Remove the front housing. Refer to Disassembly and Assembly, "Front Drive Housing - Remove and Install".
- Remove the balancer gear from the rear gear group. Refer to Disassembly and Assembly, "Gear Group (Rear) - Remove".
- Remove the flywheel housing. Refer to Disassembly and Assembly, "Flywheel Housing - Remove".
- Remove the piston cooling jets. Refer to Disassembly and Assembly, "Piston Cooling Jets - Remove and Install".

NOTICE

Failure to remove the rocker shaft assemblies and push rods can result in damaged valves when the pistons and connecting rods are pushed away from the crankshaft.

To help avoid damage to the valves, remove the rocker shaft assemblies and push rods before you remove the crankshaft.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

- Use Tooling (A) to turn the engine to a horizontal position. The engine can be supported with Tooling (A) or with blocks. The engines have the following weights:
 - 3508B Engines weigh approximately 4445 kg (9800 lb).
 - 3512B Engines weigh approximately 5902 kg (13,000 lb).
 - 3516B Engines weigh approximately 7718 kg (17,000 lb).

Note: It is not necessary to remove the counterweights from the crankshaft, if the piston and connecting rod assemblies have been removed from the engine.

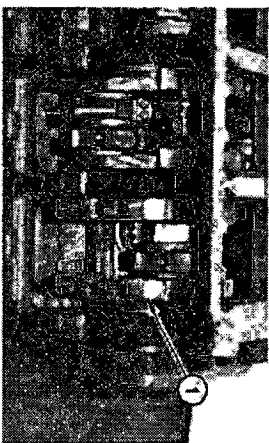


Illustration 1

g00914774

- Place identification marks on counterweights (1). Remove counterweights (1) from the crankshaft.

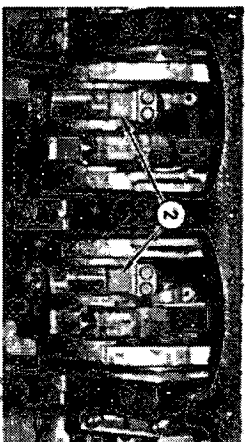


Illustration 2

Note: Ensure that the journals of the crankshaft are not scratched by the connecting rods.

3. Remove connecting rod caps (2) and push the connecting rods away from the crankshaft.

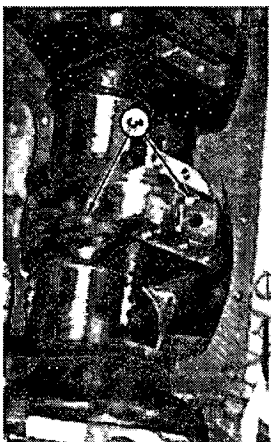


Illustration 3

g00914800

4. Remove the center main bearing cap and thrust plates (3) from each side of the center main bearing.

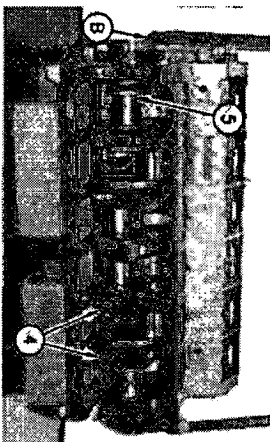


Illustration 4

g00930694

5. Attach Tooling (B) to each end of the crankshaft.

6. Attach a suitable lifting device to Tooling (B) (Illustration 4.). For 3508B Engines, the crankshaft weighs approximately 398 kg (877 lb). For 3512B Engines, the crankshaft weighs approximately 590 kg (1300 lb). For 3516B Engines, the crankshaft weighs approximately 800 kg (1764 lb). Remove remaining main bearing caps (4). Remove crankshaft (5) from the engine.

7. Remove the upper halves of the main bearings.

8. Remove the upper halves of the connecting rod bearings.

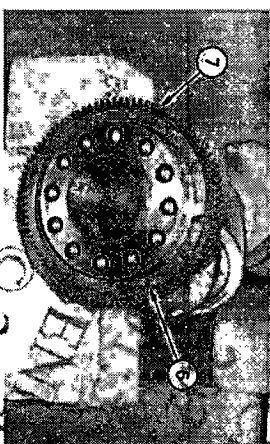


Illustration 5

g00914805

9. If necessary, remove bolts (6) and crankshaft gear (7) from each end of the crankshaft.

PCP-00022950

2025/12/13

01:57:09+07:00

101155494

© 2025 Caterpillar Inc.