

**2019 Competition**  
**Heavy Equipment Technology (#49)**

**Engine Systems  
Task**

(2 of 6)

Competitor number \_\_\_\_\_ Start time \_\_\_\_\_

Judge's name \_\_\_\_\_ Finish time \_\_\_\_\_

**Competition Overview**

**Time limit:** 2 hours  
**Equipment:** Caterpillar engine  
**Number of tasks:** 2

Task 1: Measure and adjust valve lash.

**Value 85 %**

Task 2: Evaluate engine-oil samples.

**Value 15 %**

**General Instructions:**

The judge has all the materials you will need.

If you are unsure about any procedure, you may ask your judge for clarification.  
Marks may be deducted if the judge decides you should know the procedure.

Before you start, you must go through the following Hazard Assessment with your judge so that you will be able to work safely.

## Hazard Assessment:

This Hazard Assessment is to discuss the following **5 hazards** and the counteractive measures you must take.

**Hazard 1:** The engine starter is capable of cranking the engine and the moving engine parts can hurt you.



- Keep hands clear of moving objects. (Fan, Pulleys and belts)

**Hazard 2:** Touching engine lubricating fluids may irritate skin.



- Latex gloves, barrier skin cream, and wiping cloths are available.

**Hazard 3:** You might trip over the engine support.



- Position your feet appropriately.
- Use three points of contact at all times.

**Hazard 4:** High voltage from the engine fuel injection control system can shock you, even with the key in the off position.



- Follow the procedures in the service information when testing and disconnecting terminals.

**Hazard 5:** Sharp edges from the cut filter housing can cut skin.



- Keep hands clear of sharp edges.



Ask  
Information

*If you do not quite understand or are unsure about the hazards, please ask your judge for assistance.*

*No marks will be deducted for asking about hazards.*

I have read this hazard assessment and the judge has explained it to me.

I understand the hazards and I will take precautions to avoid them.

Competitor's name \_\_\_\_\_ Judge's name \_\_\_\_\_ Date \_\_\_\_\_

**Evaluation:**

Number of marks possible: **18.0**

Skills evaluated	Tasks				
	Task 1	Task 2			
a. Use of safety equipment & safe and clean workspace					
b. Use and interpretation of service manuals & schematic diagrams					
c. Logical order of repair					
d. Proper use of tools					
e. Precise adjustment of components					
f. Accurate measurements					
g. Superior Workmanship					
h. Identification of faults, codes, or components					



Ask  
Information

*If you cannot proceed with a task, ask your judge for assistance.*

**Task 1 of 2: Measure and adjust valve lash.**

**Value 85 %**

1. Follow the manufacturer's procedures to safely, appropriately, and accurately:

- Measure and adjust valve lash.

2. In point form; briefly record your findings and any adjustments or components that were out of specifications.

---

---

---

---

---

---

---

---



Ask  
Information

*If you cannot proceed with a task, ask your judge for assistance.*

**Task 2 of 2: Evaluate engine-oil samples.**

**Value 15%**

Safely, appropriately and accurately:

- Evaluate engine-oil samples.

Answer the questions on the attached Fluid Analysis data sheets.

---



Ask  
Information

*If you cannot proceed with a task, ask your judge for assistance.*

## Congratulations!

You have completed the required tasks.

Once you have completed this topic you must clean up your workstation and return any tools/materials.

Use the space below for comments.

Return this competition form to your judge for evaluation.

[illegible]