Skills Compétences Canada

OUTBOARD SERVICE

Outdoor Power and Recreation

POST-SECONDARY

SkillsCompétences Canada
Regina2025

Outboard Motor

Do not start this lab until you are told that the competition is ready to start.

If there is something you do not understand, you may ask for clarification from the person in charge.

If you have completed this lab early, please check your answers and wait quietly until everyone has finished, or all the time is used.

Section 1: Information Retrieval

Using the service manual, locate and record the following specifications and torques.

Locate and record the Model and Serial Number. Determine the following information from the Model and Serial Number.

Model Description:	
Model Number:	
Transom Height Measurement:	
Weight	
Oil Pump Type	
Serial Number:	
Ignition Timing @ WOT	

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Section 2: Lower Unit

Following the service manual procedure remove the lower unit to service the water pump.

Torques and Specifications

Torques	
Lower Unit Mount Bolts	
Specifications	
Recommended Lower Unit Oil	
Lower Unit Gear Ratio	
Clutch Type	

Lower Unit inspection

Remove the lower unit (the lower unit is already drained of oil) Remove and inspect the water pump.

Record any issues with the water pump:

_____

Theory of Operation Questions

Answer the following questions regarding the Lower Unit and Cooling System.

1. What gear should the lower unit be in prior to installation?
   - _____
2. What is the procedure for refilling the lower unit?
   - _____
3. Why must you fill it in this manner?
   - _____
4. What would be the most expected cause of milky gear oil?
   - _____
5. What would black gear oil indicate?
   - _____
6. Does this outboard use an open loop or closed loop cooling system?

- _____

7. At what temperature does the thermostat start to open?
   - _____

8. Does the water pump utilize a positive displacement design?
   - _____

9. What is the PRIMARY purpose of the trim tab?
   - _____

10. What is the trim tab made of?
    - _____

11. Why is the trim tab made of this metal?
    - _____

12. What material is the prop made of according to the service manual?
    - _____

13. What is the right propeller part number for a customer that have a 14ft Long boat and an average gross weight of 1700lb?
    - _____

14. Explain prop pitch.
    - _____

15. Dry running an outboard would cause what kind of damage to the water pump?
    - _____

Reassemble the lower unit and reinstall. Torque all fasteners. Have the judge verify your torque wrench settings.

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Section 3: Compression

Following the service manual procedure, perform a compression test. Look up all specifications and torques. Record results.

Torques and Specifications

Torques	
Spark Plug	
Specifications	
Compression Test Minimum	
Spark Plug Number	

Compression Test

Perform the test and record the results.

Compression Test Results	
Cylinder 1	
Cylinder 2	
Cylinder 3	

Perform a Leak down test on the problem cylinder only!

1. What position of the piston and valves during this test?

_____

2. Where do you suspect the issue is?

_____

3. What would be your next step?

_____