

4T Top End Lab

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

If there is something you don't 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: Specifications

Using the service manual, locate and record the following specifications and torques^{5,8}.

Clearance Specifications

INT Camshaft to Cylinder head Bearing Clearance	
EXH Camshaft Bearing Clearance	

Torque Specifications

Camshaft Cap bolts	1st
	Final:
Camshaft Gear Bolts	
Qty X Diameter bolts	1st:
	2nd:
	Final:
Qty. X Diameter Bolts	
Qty. X Diameter Bolts	

Section 2: Measurements

Measurements- Use the supplied tools and charts to record the camshaft and valve measurements

Intake Camshaft	
Exhaust Camshaft	
Valve clearance	

Section 3: Reassembly

Reassemble the top end components as per the Service Manual, making note of the following:

Show judge all torque wrench settings prior to use.

Section 4: Theory Questions⁷

1. Why do we use “torque to angle” fasteners in critical areas of an engine?

2. Why do we lubricate the main bearing bolt threads with engine oil?

3. Are you able to reuse the rod bolts on this engine? _
4. What is recommended to seal the crankcase halves on final assembly?

5. What is applied to the threads of the connecting rod fastener threads?

6. Are the connecting rod caps interchangeable between rods?

Essential Skills - ⁵Reading, ⁷Thinking (Significant use of Memory, ⁸Document Use,)