Names: _____ & _____ Engine # _____
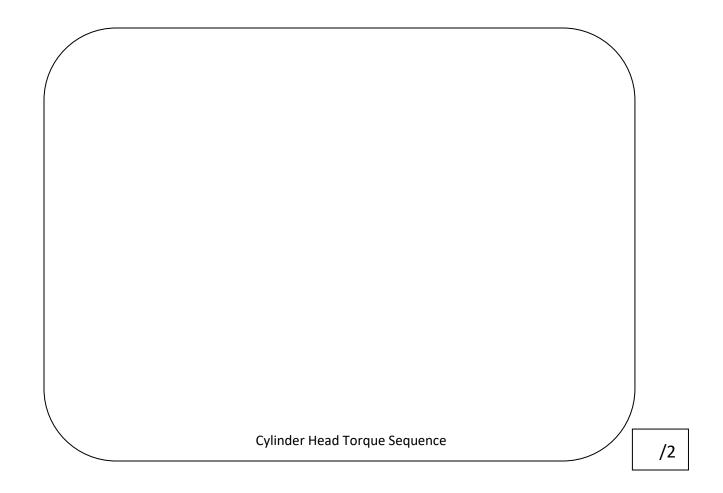
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4-stroke Internal Combustion Engine

Job – Displacement

Disassembly

1. Remove the engine shroud.

2. Locate the cylinder head torque sequence in the Briggs & Stratton Manual.

3. In the space provided below, make a neat drawing of the cylinder head as if looking down on it from above. Indicate on each fastener the tightening sequence that you must follow when you torque down the cylinder head.

Cylinder Head Torque Sequence

/2

4. Working in the **reverse** torque sequence (#8 - #1), remove the cylinder head.

5. Locate and record the value to which the head bolts will need to be torqued to during reassembly and record it here:

   Required head bolt torque: _____ _____
                                                value   unit

   | /1 |

Calculate Your Engine's Displacement

1. Measure the cylinder's *bore.*

   Bore _____ mm.   Bore _____ inch

2. Measure the cylinder's *stroke.*

   stroke _____ mm.   stroke _____ inch

   | /4 |

3. Choose one of the formulas below and calculate your engine's displacement.

$$\text{Displacement} = \pi r^2 \times \text{stroke}$$

$$\text{Displacement} = \frac{\text{bore}^2 \times \pi \times \text{stroke}}{4}$$

Show <u>all</u> work! *(1. Formula   2. Substitute   3. Answer)*

   a. Cubic Inches (ci)

   | /3 |

   b. Cubic Centimeters (cc)

   | /3 |

Reassembly

1. Explain what could happen if the cylinder head bolts are placed in the wrong holes?

   _____

   _____   /1

2. Reassemble and torque down the cylinder head **using the proper sequence, torque value and bolt placement.**

Questions

1. What is the material your engine's cylinder head is made from?

   /1

2. What are two advantages of using the type of material you identified in question one?

   /2

3. Why is it important to 'torque the cylinder head bolts?

   /1

4. Why is it important to follow a tightening sequence when torquing down a cylinder head?

   /1

5. A Dodge Viper has a V10 engine (10 cylinders). Calculate the engine's displacement given it has a bore of 3 ¾" and a stroke of 3 ¾". Show all of your work rounding your final answer to the nearest whole number.

   /3