

Calculating Engine/Piston Displacement

March 5, 2012

About Piston Displacement Calculations

One of the most important things to remember when calculating piston displacement is that you are measuring _____.

To calculate your engines displacement use this formula:

$$\text{Piston Displacement} = \pi \times (\text{Radius})^2 \times \text{Stroke} \times \text{Number of cylinders}$$

π =

Radius =

Stroke =

Number of cylinders =

Sample Problem

Here is an Example:

This engine has: Bore = 80 mm

Stroke = 90 mm

Number of Cylinders = 1

Radius = Bore/2

= 80 ÷ 2

= 40 mm

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$$\begin{aligned}\text{Piston Displacement} &= \pi \times (\text{radius})^2 \times \text{stroke} \times \text{number of cylinders} \\ &= 3.14 \times (40)^2 \times 90 \times 1 \\ &= 3.14 \times 1600 \text{ mm} \times 90 \times 1 \\ &= 452,160 \text{ mm}^3\end{aligned}$$

You will notice that your answer is in mm^3 . Engines are usually given a size of displacement in cm^3 or commonly referred to as CC's. To convert your answer to CC's, divide your answer by 1000. In this example, you would have $452,160\text{mm}^3 \div 1000$ giving you an answer of 452.16 cm^3 or 452.16 cc. This engine has a displacement of 452.16 cm^3 or 452.16 cc.

Practice Problem – Calculate the Engine Displacement Given the Information

The engine has: Bore = 87.5 mm

Stroke = 91.4 mm

Number of Cylinders = 2

Radius = Bore/2

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