How to Measure the Displacement of a 600cc Cylinder

Measure Stroke
- Raise the rear of the car until the tires are off the ground.
- Turn motor over by means of motor sprocket nut with socket & ratchet wrench.
- Put transmission in highest gear (5th/6th).
- Remove #1 spark plug.
- Thread stroke tool into the #1 cylinder.
- Turn motor over so piston is at BDC, zero caliper and set to MM.
- Turn to TDC (top dead center) and read stroke on the caliper.

Measure Bore
- Turn again to BDC (bottom dead center), with the fingers of the bore gauge closed, insert the bore gauge into the #1cylinder.
- Open bore gauge fingers to touch the sides of the cylinder, slide knob down to tool body.
- Lock the bore gauge in place with thumb screw.
- Pull up on shaft knob to close the bore gauge fingers.
- Remove tool, push down on shaft to pre-determined stop to open fingers
- Measure finger opening with the caliper (stroke gauge will work) to determine the bore.

Calculate the Displacement (volume of a cylinder)

Covert all measurements to Centimeters before calculating in order to find the final displacement in cc's (cubic centimeters).

Convert milimeters to centimeters simply by moving the decimal place one position to the left, so a 4.23 mm measurement becomes .423

$\pi \cdot R^2 \cdot \text{length}$ or

$(\text{bore}/2)^2 \cdot \text{stroke} \cdot 3.1416 = \text{CC's}$ or $(\text{bore}/2 \cdot \text{bore}/2) \cdot \text{stroke} \cdot 3.1416$

For example, an engine (kawi 636) has a bore of 68mm and a stroke of 43.8mm
or 6.8cm bore and a 4.38cm stroke

$(6.8/2)^2 \cdot 4.38 \cdot 3.1416 = 3.4^2 \cdot 13.760208 = 11.56 \cdot 13.760208 = 159.068\text{cc's}$

Now take that times 4 to get total displacement

so $159.068 \cdot 4 =$ **636.272 total cc's**