LKK Auto Consultants Pte Ltd
Company Registration No. 199607198R
51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108

Your Ref: Honda Engine (number K20C11002418)
Our Ref : CI/TP21006888/D

22 June 2021

Lee Jia Li Kelly
36 Moonstone Lane #05-04
Singapore 328468

INSPECTION REPORT OF A HONDA ENGINE WITH NUMBER K20C11002418

1. I refer to your request on 14 June 2021 to conduct a physical inspection of a Honda engine.

2. The purpose of this inspection was to primarily determine whether the Honda engine is a Honda K20C model engine.

3. Following the request, I had carried out a physical inspection of the Honda engine on 17 June 2021 at the premises of Block 6 Yew Tee Industrial Estate #399, Woodlands Road, Singapore 677981.

4. Measurements of the bore and stroke of the Honda engine were obtained and thereafter compared with the bore and stroke size as stated in the technical specifications of a Honda K20C model engine.

5. I now set out below my observations and comments regarding this inspection.

Inspection of the Honda Engine

6. Firstly, I had noted that the Honda engine was a used engine and not fitted on any motor car at the time of my inspection. It was observed to be a complete assembly with all mechanical parts still intact, within the engine housing. The engine number engraved on the housing was K20C11002418.

7. My visual examination of the engine housing revealed the housing to be of serviceable/satisfactory condition. There was no crack and/or hole observed on the engine housing.

8. Upon my request, the Honda engine was dismantled, specifically the top block was separated from the bottom block. This was to enable me to carry out measurements of its cylinders, in particular the bore and stroke of each cylinder, which typically can be used to determine the engine displacement or more commonly referred to as engine cc or engine size. See photo 1 – 4 below.

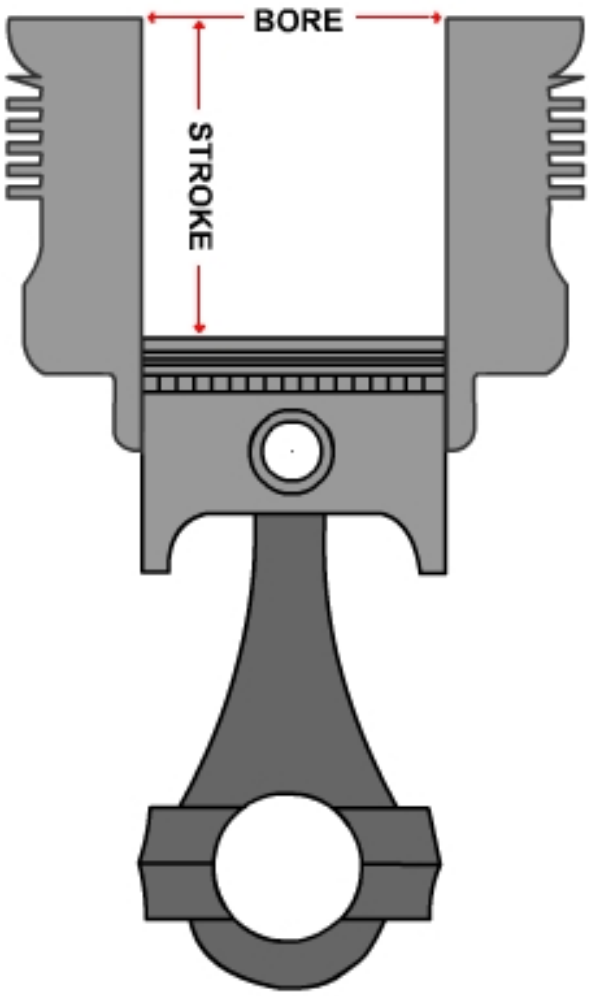
Photo 1 shows a general view of the Honda engine that I had inspected. The Honda engine was observed to be a used engine and was not fitted on any motor car. It was also observed to be a complete assembly with all mechanical parts still intact, within the engine housing.

Photo 2 shows a general view of the Honda engine that I had inspected. My visual examination of the engine housing revealed the housing to be of serviceable/satisfactory condition. There was no crack and/or hole observed on the engine housing.

Photo 3 shows a general view of the Honda engine that I had inspected. My visual examination of the engine housing revealed the housing to be of serviceable/satisfactory condition. There was no crack and/or hole observed on the engine housing.

Photo 4 shows the engine number engraved on the housing of the Honda engine that I had inspected. The engine number was K20C11002418.

9. The bore refers to the measurement of the inside diameter of the cylinder while the stroke refers to the distance the piston moves in one direction of upward or downward movement in the cylinder. See diagram below for illustration purposes.



10. The bore and stroke measurements of the 4 cylinders of the Honda engine are set out in the table below. Photo 5 – 22 thereafter shows the photographs taken during the measurements.

	Bore (mm)	Stroke (mm)
Cylinder 1	85.21	85.85
Cylinder 2	85.59	85.89
Cylinder 3	85.88	85.88
Cylinder 4	85.39	85.86

Photo 5 shows the top block (yellow arrow) of the Honda engine separated from its bottom block (red arrow). This was to enable me to carry out measurements of its cylinders, in particular the bore and stroke measurements of each cylinder, which typically can be used to determine the engine displacement or more commonly referred to as engine cc.

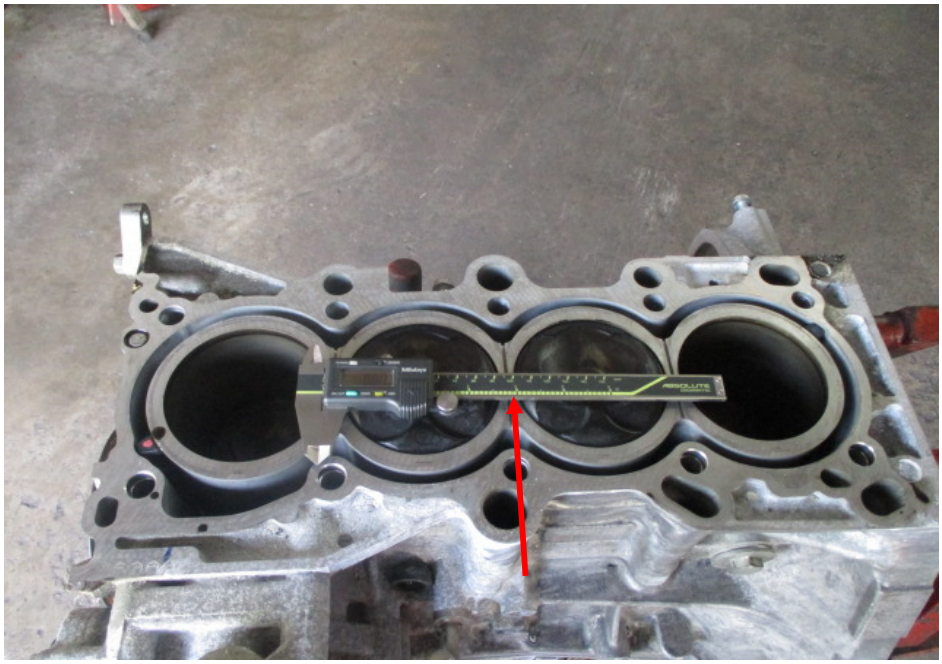


Photo 6 shows the bottom block of the Honda engine and the digital Vernier Caliper (arrowed) that was used to measure the bore and stroke of each cylinder, which typically can be used to determine the engine displacement or more commonly referred to as engine cc. The digital Vernier Caliper was calibrated before the start of the measurements.

Photo 7 shows measurement being carried out to the bore (arrowed) of cylinder 1 of the Honda engine. The bore and stroke measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

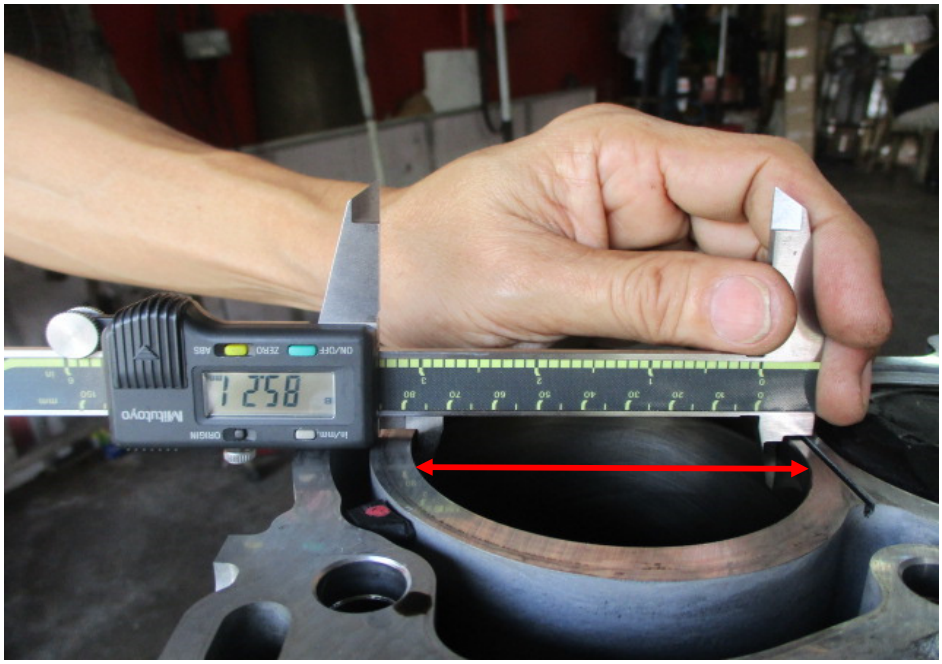


Photo 8 shows the bore measurement of cylinder 1, which was recorded to be 85.21mm.

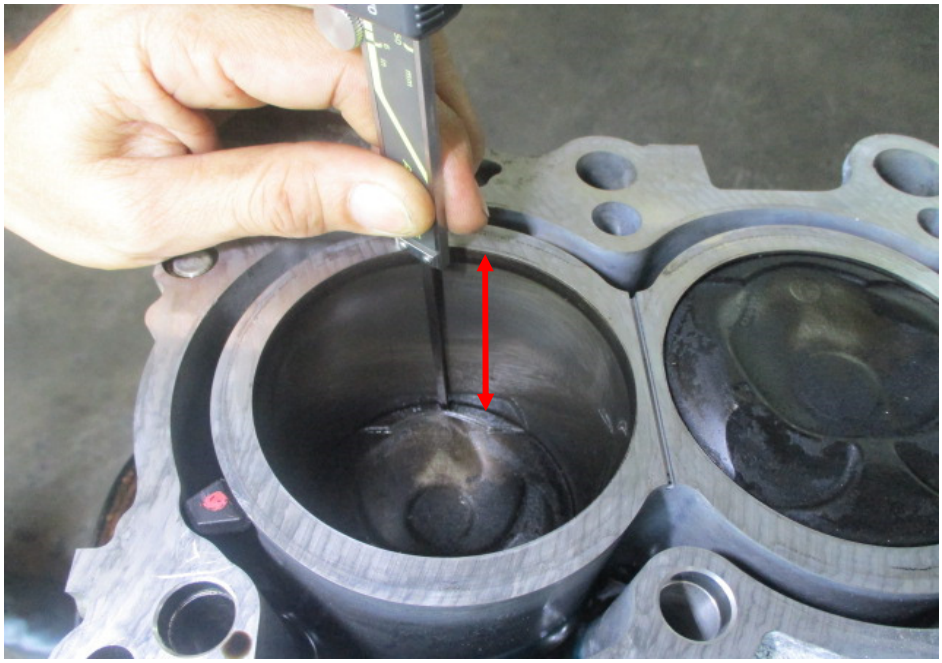


Photo 9 shows measurement being carried out to the stroke (arrowed) of cylinder 1 of the Honda engine. The bore and stroke measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 10 shows measurement being carried out to the stroke of cylinder 1 of the Honda engine. The bore and stroke measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 11 shows the stroke measurement of cylinder 1, which was recorded to be 85.85mm.

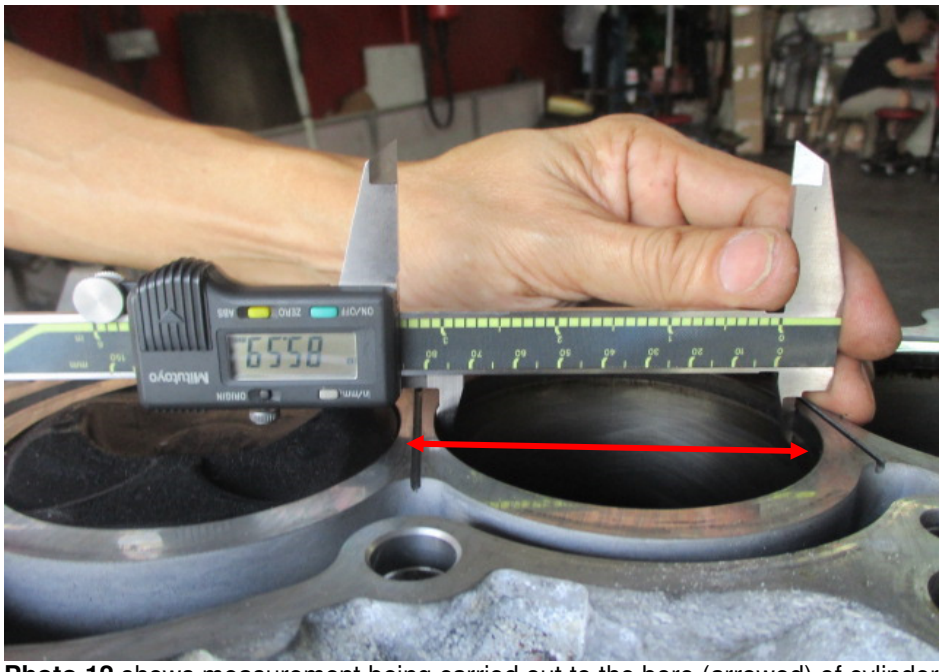


Photo 12 shows measurement being carried out to the bore (arrowed) of cylinder 2 of the Honda engine. The bore and stroke measurement of cylinder 2 was recorded to be 85.59mm.

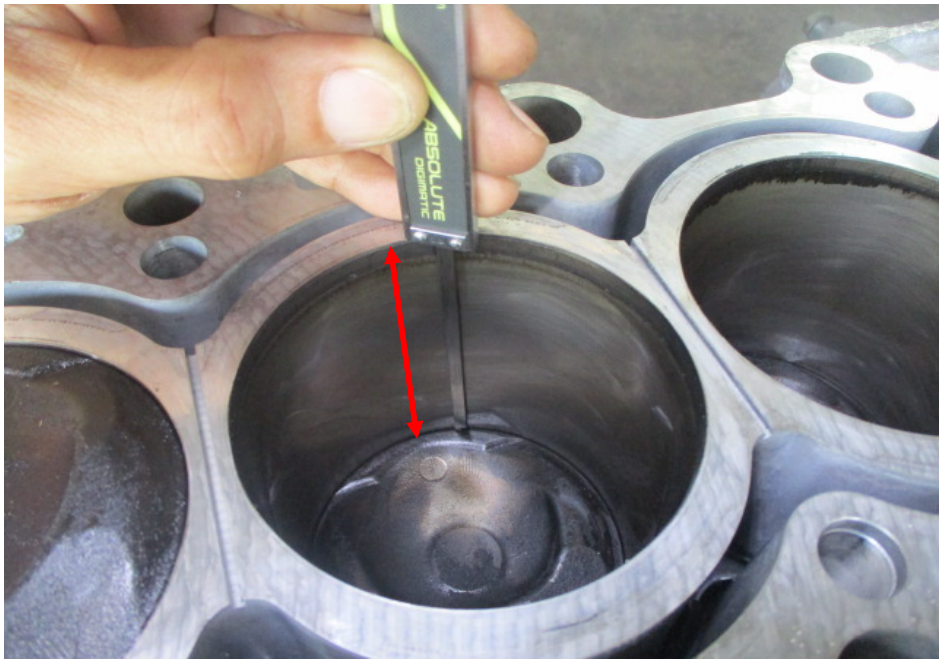


Photo 13 shows measurement being carried out to the stroke (arrowed) for cylinder 2 of the Honda engine that I had inspected. The bore and stroke measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 14 shows the stroke measurement of cylinder 2, which was recorded to be 85.89mm.

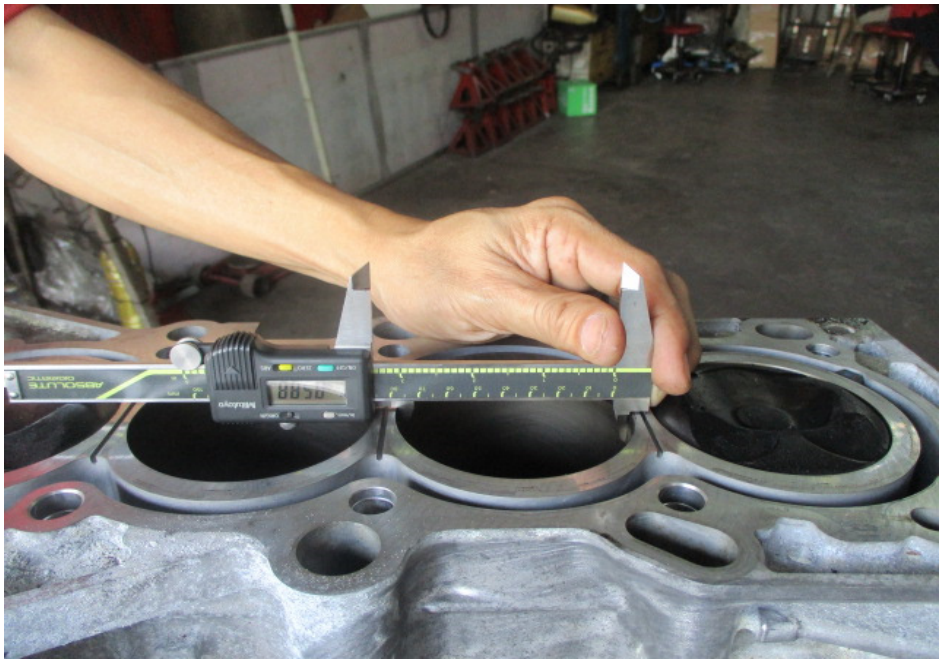


Photo 15 shows measurement being carried out to the bore of cylinder 3 of the Honda engine. The bore and stroke measurements of the Honda engine were carried out using a digital Vernier Caliper.

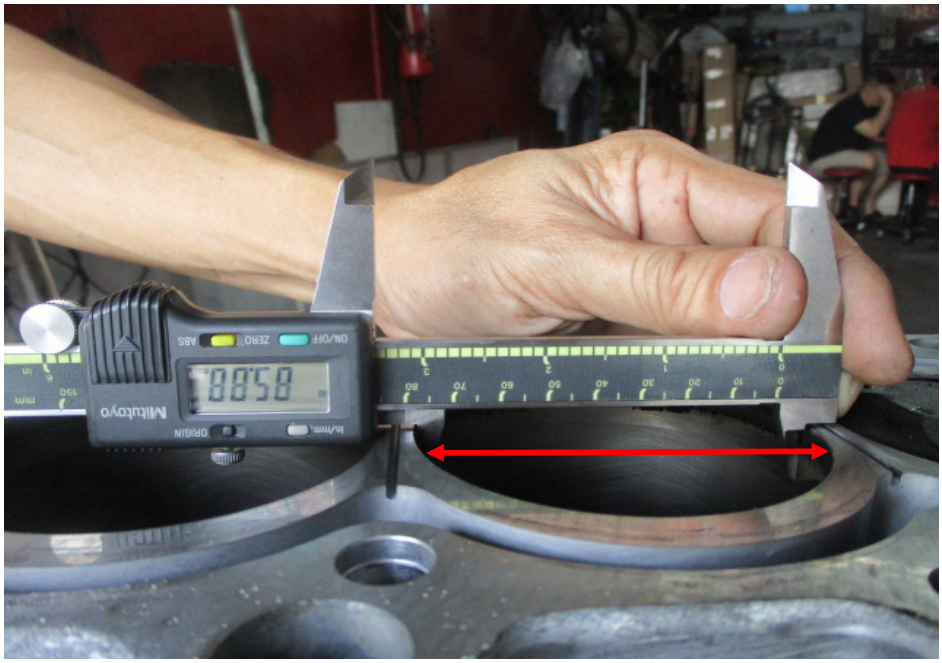


Photo 16 shows measurement being carried out to the bore (arrowed) of cylinder 3 of the Honda engine. The bore measurement of cylinder 3 was recorded to be 85.88mm.

Photo 17 shows measurement of the stroke for cylinder 3 of the Honda engine that I had inspected. The bore and stroke measurements of the Honda engine were carried out using a digital Vernier Caliper that was calibrated before the start of measurements.

Photo 18 shows the stroke measurement of cylinder 3, which was recorded to be 85.88mm.

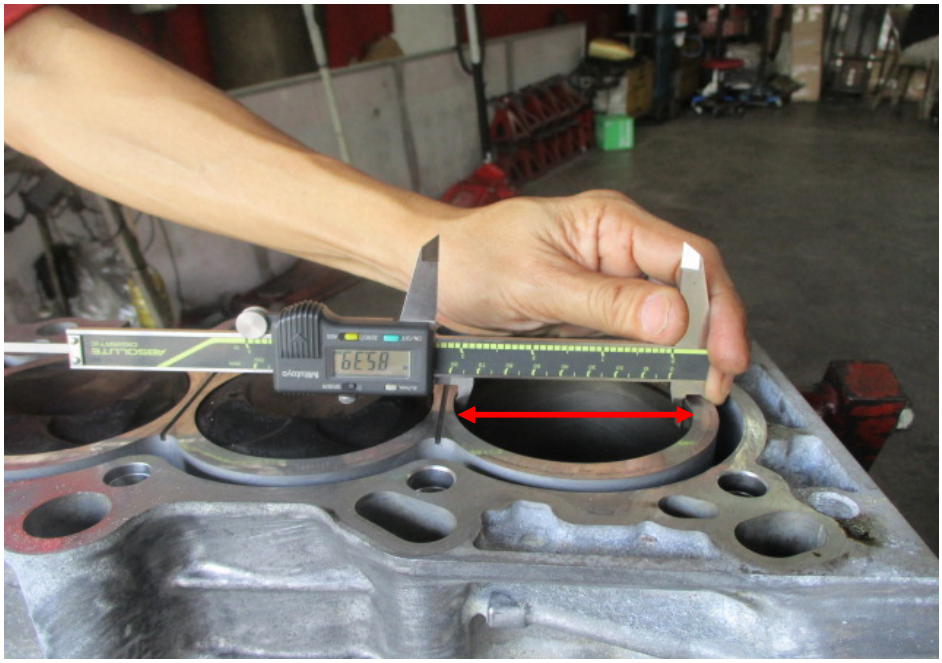


Photo 19 shows measurement being carried out to the bore (arrowed) of cylinder 4 of the Honda engine. The bore measurement of cylinder 4 was recorded to be 85.39mm.

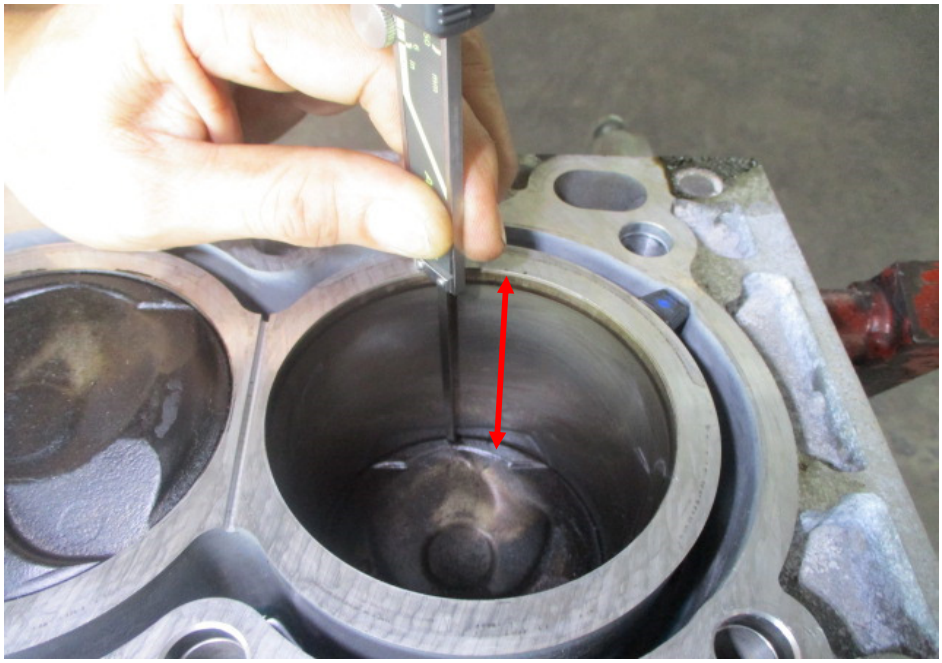


Photo 20 shows measurement being carried out to the stroke (arrowed) of cylinder 4 of the Honda engine. The bore and stroke measurements of the Honda engine were carried out using a digital Vernier Caliper that was calibrated prior to the start of measurements.

Photo 21 shows measurement being carried out to the stroke of cylinder 4 of the Honda engine. The bore and stroke measurements of the Honda engine were carried out using a digital Vernier Caliper that was calibrated prior to the start of measurements.

Photo 22 shows the stroke measurement of cylinder 4, which was recorded to be 85.86mm.

Honda K20C Engine Technical Specifications

11. In order to determine whether the Honda engine that I had inspected was a Honda K20C model engine, I had compared the measurements of the bore and stroke of the Honda engine with the bore size and stroke size of the Honda K20C model engine, as stated in its technical specifications. According to the technical specification of the Honda K20C model engine, the bore size and stroke size was 86.00mm and 85.90mm respectively.

12. Upon comparison, I note that the bore and stroke measurements of the Honda engine that I had inspected (shown in paragraph 10 above) had corresponded to the bore size and stroke size as stated in the technical specifications of a Honda K20C model engine. The measurements recorded from the Honda engine were all slightly lesser (at maximum 0.79mm lesser). This difference can be attributed to carbon accumulation within the cylinders, as the Honda engine that I had inspected was a used engine.

13. Since the bore and stroke of the Honda engine had corresponded to a Honda K20C model engine, the engine displacement of the Honda engine that I had inspected would then be 1996cc. See technical specifications of Honda K20C model engines below.

Honda K20C	
	
Overview	
Manufacturer	Honda Motor Co., Ltd.
Production	2015-present
Layout	
Configuration	L4
Displacement	2.0 L; 121.8 cu in (1,996 cc)
Cylinder bore	86 mm (3.386 in)
Piston stroke	85.9 mm (3.382 in)

Conclusion

14. In summary, the Honda engine that I had inspected was a Honda K20C model engine. The engine number engraved on the housing of this Honda engine was K20C11002418. The engine displacement of the Honda engine is 1996cc as per the technical specification.

Ang Bryan Tani
AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA
Senior Technical Investigator
Technical Investigation & Accident Reconstructionist (SAE-A)