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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 K20A5824485)
Our Ref : CI/TP20002162/D

07 February 2020

Balamurugan S/O Raja Singam
Block 788C Woodlands Crescent #02-160
Singapore 733788

INSPECTION REPORT OF A HONDA ENGINE WITH NUMBER K20A5824485

1. I refer to your request on 03 February 2020 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 K20A model engine.

3. Following the request, I had carried out a physical inspection of the Honda engine on 06 February 2020 at the premises of SKM Motor Works Pte Ltd, No. 10 Kaki Bukit Road 2 #03-31 First East Centre, Singapore 417868.

4. Measurements of the bore and stroke of the Honda engine were obtained and thereafter compared with the bore and stroke measurements as stated in the technical specifications of a Honda K20A model engine.

5. I now set out below my observations and comments with respect to 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 K20A5824485.

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 measurements 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.

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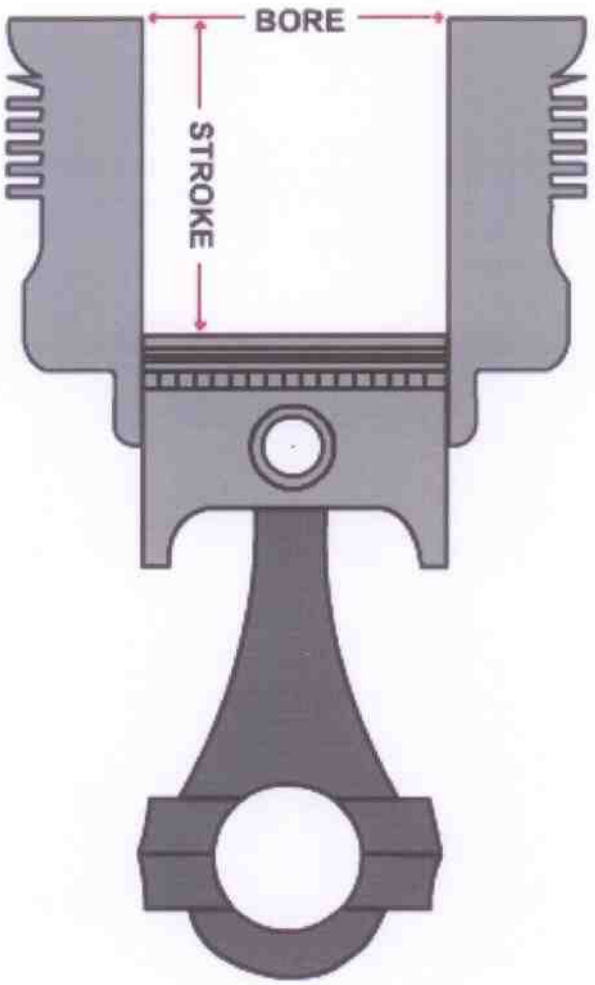
Photo 1 shows a general view of the Honda engine that I had inspected. The Honda engine was observed to be a used engine and was not fitted on any motor car. It was also observed to be a complete assembly with all mechanical parts still intact, within the engine housing.

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 closer 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 K20A5824485.

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	85.62	85.63
Cylinder 2	85.93	85.88
Cylinder 3	85.94	85.77
Cylinder 4	85.89	85.84

Photo 5 shows the top block of the Honda engine separated from its bottom block. 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 measurements 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.

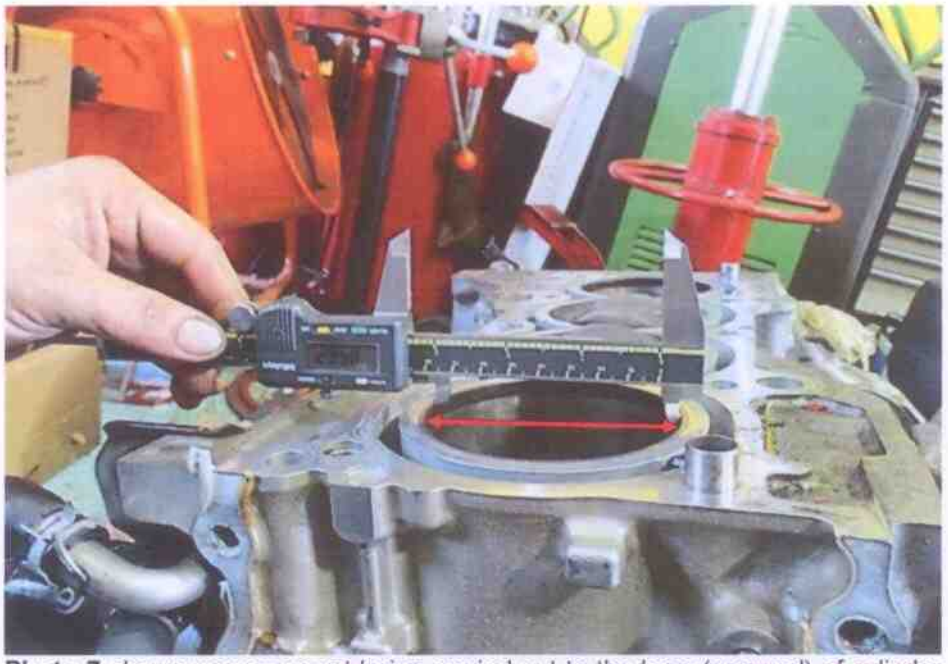


Photo 7 shows measurement being carried out to the bore (arrowed) of cylinder 1 of the Honda engine. The measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 8 shows the bore measurement of cylinder 1, which was recorded to be 85.62mm.

Photo 9 shows measurement being carried out to the stroke of cylinder 1 of the Honda engine. The bore and stroke measurements of the Honda engine were carried out using a digital Vernier Caliper.

Photo 10 shows measurement being carried out to the stroke (arrowed) of cylinder 1 of the Honda engine. The bore and stroke measurements of the Honda engine 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 85.63mm.

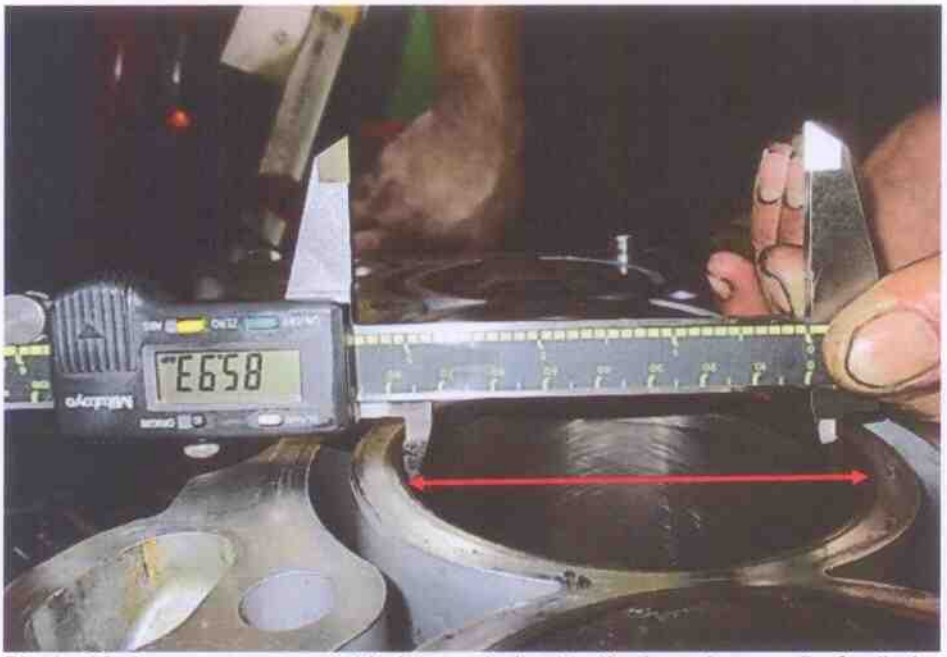


Photo 12 shows measurement being carried out to the bore (arrowed) of cylinder 2 of the Honda engine. The bore measurement of cylinder 2 was recorded to be 85.93mm.

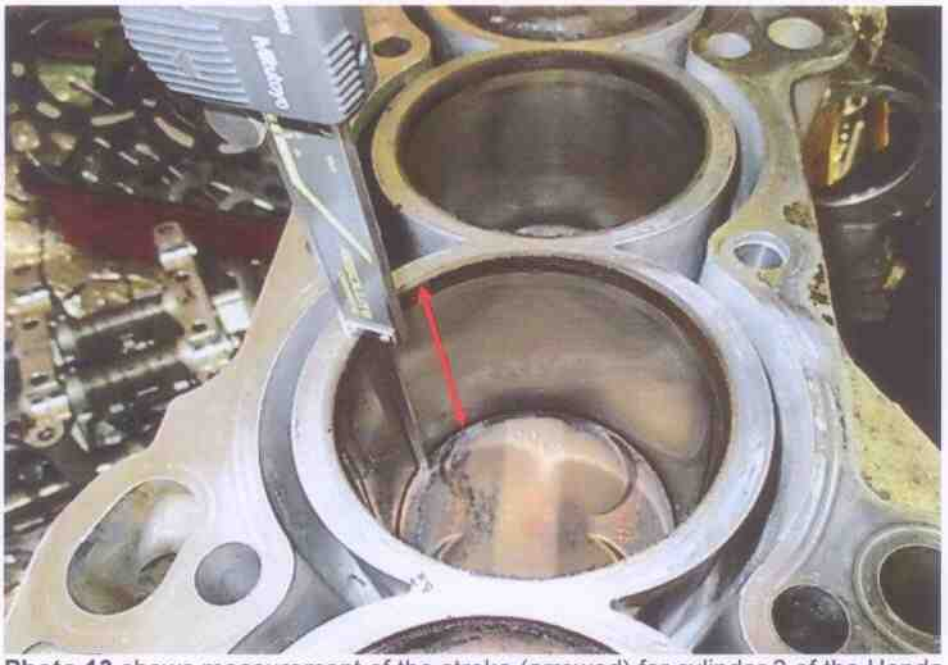


Photo 13 shows measurement of the stroke (arrowed) for cylinder 2 of the Honda engine that I had inspected.

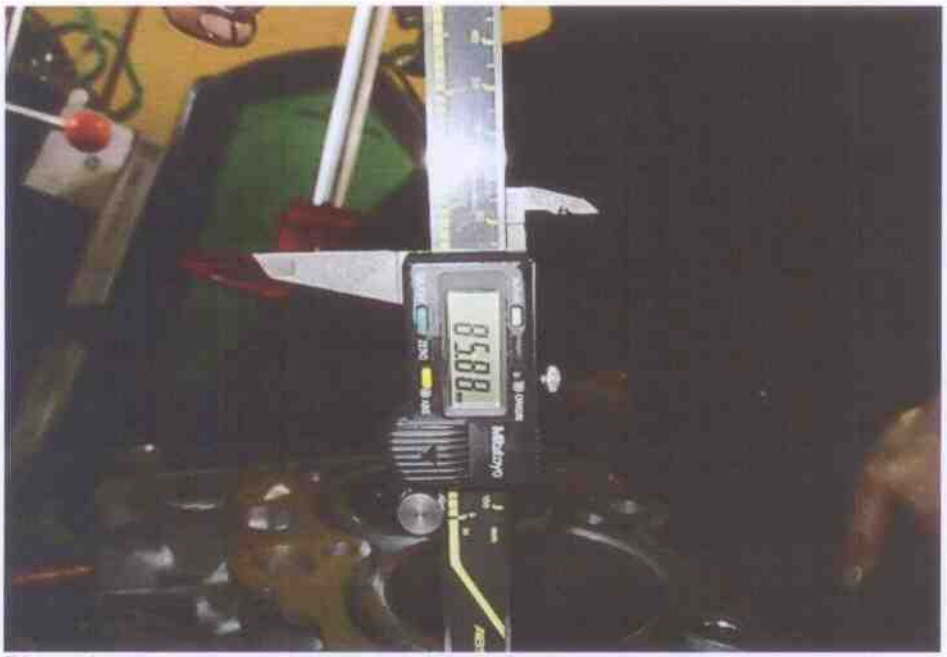


Photo 14 shows the stroke measurement of cylinder 2, which was recorded to be 85.88mm.

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 85.94mm.

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 85.77mm.

Photo 19 shows measurement being carried out to the bore (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.

Photo 20 shows the bore measurement of cylinder 4, which was recorded to be 85.89mm.

Photo 21 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 22 shows the stroke measurement of cylinder 4, which was recorded to be 85.84mm.

Honda K20A Engine Technical Specifications

11. In order to determine whether the Honda engine that I had inspected was a Honda K20A model engine, I had compared the measurements of the bore and stroke of the Honda engine with the bore and stroke measurements of the Honda K20A model engine, as stated in its technical specifications. According to the technical specification of the Honda K20A model engine, the bore and stroke measurement was 86.00mm and 86.00mm 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 and stroke measurements as stated in the technical specifications of a Honda K20A model engine. The measurements recorded from the Honda engine were all slightly lesser (at maximum 0.38mm 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 K20A model engine, the engine displacement of the Honda engine that I had inspected would then be 1998cc. See technical specifications of Honda K20A model engines below.

Honda K-Series Engine Specs	K20A
Displacement (cu in / cc):	121.9 / 1998 ←
Horsepower:	221 hp @ 8000 RPM
Torque:	159 lb-ft @ 6100 RPM
Bore and Stroke (in / mm):	3.386 x 3.386 / 86 x 86 ←

Conclusion

14. In summary, the Honda engine that I had inspected was a Honda K20A model engine. The engine number engraved on the housing of this Honda engine was K20A5824485. The engine displacement of the Honda engine is 1998cc as per the technical specification.

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