

Your Ref: Honda Engine  
Our Ref : CI/TP18012599/D

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### **INSPECTION REPORT OF A HONDA ENGINE**

1. I refer to your request on 09 July 2018 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 B16A model engine.
3. Following the request, I had carried out a physical inspection of the Honda engine on 09 July 2018 at the premises of M/s Gary's Engineering Pte Ltd, 53 Ubi Avenue 1 #01-42, Paya Ubi Industrial Park, Singapore 408934.
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 B16A 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 note that the Honda engine was a used engine and not fitted on any motor car. 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 B16A5803180.
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.



**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. 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. 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.



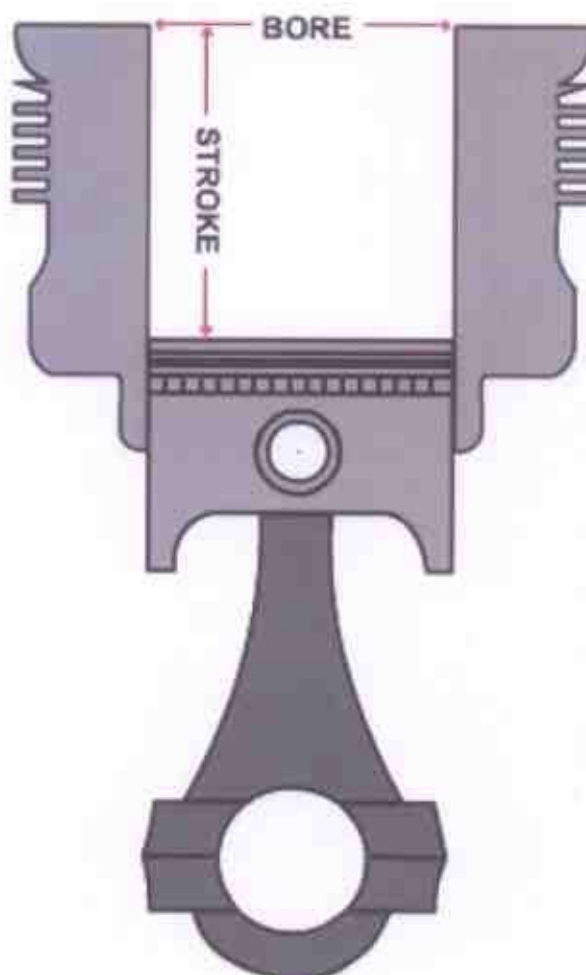
Photo 3 shows a general view of the Honda engine that I had inspected. My visual examination of the engine housing revealed the housing to be of serviceable/satisfactory condition. There was no crack and/or hole observed on the engine housing.



Photo 4 shows the engine number engraved on the housing of the Honda engine that I had inspected. The engine number was B16A5803180.



9. The bore of an engine 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 – 19 thereafter shows the photographs taken during the measurements.

	Bore (mm)	Stroke (mm)
Cylinder 1	79.90	76.93
Cylinder 2	79.87	77.24
Cylinder 3	79.47	77.15
Cylinder 4	79.79	76.89



**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 that was used to measure the bore and stroke of the Honda engine. The digital Vernier Caliper was calibrated before the start of the measurements.



Photo 7 shows measurement being carried out to the bore of cylinder 1 of the Honda engine. The measurement was carried out using a digital Vernier Caliper.



Photo 8 shows measurement being carried out to the bore of cylinder 1 of the Honda engine. The bore measurement of cylinder 1 was recorded to be 79.90mm.





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 that was calibrated before the start of the measurement.



Photo 10 shows the stroke measurement of cylinder 1, which was recorded to be 76.93mm.



Photo 11 shows measurement being carried out to the bore of cylinder 2 of the Honda engine. The bore measurement of cylinder 2 was recorded to be 79.87mm.



Photo 12 shows measurement of the stroke of cylinder 2 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 the measurement.





Photo 13 shows the stroke measurement of cylinder 2, which was recorded to be 77.24mm.



Photo 14 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. The bore measurement of cylinder 3 was recorded to be 79.47mm.



Photo 15 shows measurement of the stroke of 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 16 shows the stroke measurement of cylinder 3, which was recorded to be 77.15mm.



Photo 17 shows measurement being carried out to the bore of cylinder 4 of the Honda engine. The bore measurement of cylinder 4 was recorded to be 79.79mm.



Photo 18 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 before the start of measurements.





Photo 19 shows the stroke measurement of cylinder 4, which was recorded to be 76.89mm.

### **Honda B16A Engine Technical Specifications**

11. In order to determine whether the Honda engine that I had inspected was a Honda B16A model engine, I had compared the measurements of the bore and stroke of the Honda engine, obtained during my inspection, with the bore and stroke measurements of the Honda B16A model engine, as stated in its technical specifications. According to the technical specification, I note that the bore and stroke measurement of the Honda B16A model engine were 81.00mm and 77.40mm.
12. Upon comparison with the technical specification, 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 Honda B16A model engine. Although the measurements recorded from the Honda engine were all slightly lesser (at maximum 1.53mm lesser), this difference can be attributed to carbon accumulation within the cylinders, as the Honda engine that I had inspected was a used engine. See technical specifications of Honda B16A model engines below.

## Honda B16A/B16B engine specs

Manufacturer	Honda Motor Company
Also called	Honda B16
Production	1989-2000
Cylinder block alloy	Aluminum
Configuration	Inline-4
Valvetrain	DOHC 4 valves per cylinder
Piston stroke, mm (inch)	→ 77.4 (3.05)
Cylinder bore, mm (inch)	→ 81 (3.19)
	10.2
Compression ratio	10.4
	10.8

### Conclusion

13. In summary, the Honda engine that I had inspected is a Honda B16A model engine. The engine number engraved on the housing of this Honda engine was B16A5803180.



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