

Your Ref: Mitsubishi Engine  
(number 4B11BC0151)  
Our Ref : CI/TP22006781/D

18 July 2022

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### **INSPECTION REPORT OF A MITSUBISHI ENGINE WITH NUMBER 4B11BC0151**

1. I refer to your request on 11 July 2022 to conduct a physical inspection of a Mitsubishi engine.
2. The purpose of this inspection was to primarily determine whether the Mitsubishi engine is a Mitsubishi 4B11 model engine.
3. Following the request, I had carried out a physical inspection of the Mitsubishi engine on 15 July 2022 at the premises of Miracle Workz Pte Ltd, 48 Toh Guan Road East #04-130 Enterprise Hub, Singapore 608586.
4. Measurements of the bore and stroke of the Mitsubishi engine were obtained and thereafter compared with the bore and stroke measurements as stated in the technical specifications of a Mitsubishi 4B11 model engine.
5. I now set out my observations and comments pertaining to this inspection.

#### **Inspection of the Mitsubishi Engine**

6. Firstly, I had noted that the Mitsubishi 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 4B11BC0151.
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 Mitsubishi 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 Mitsubishi engine that I had inspected. The Mitsubishi 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 closer view of the Mitsubishi 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.



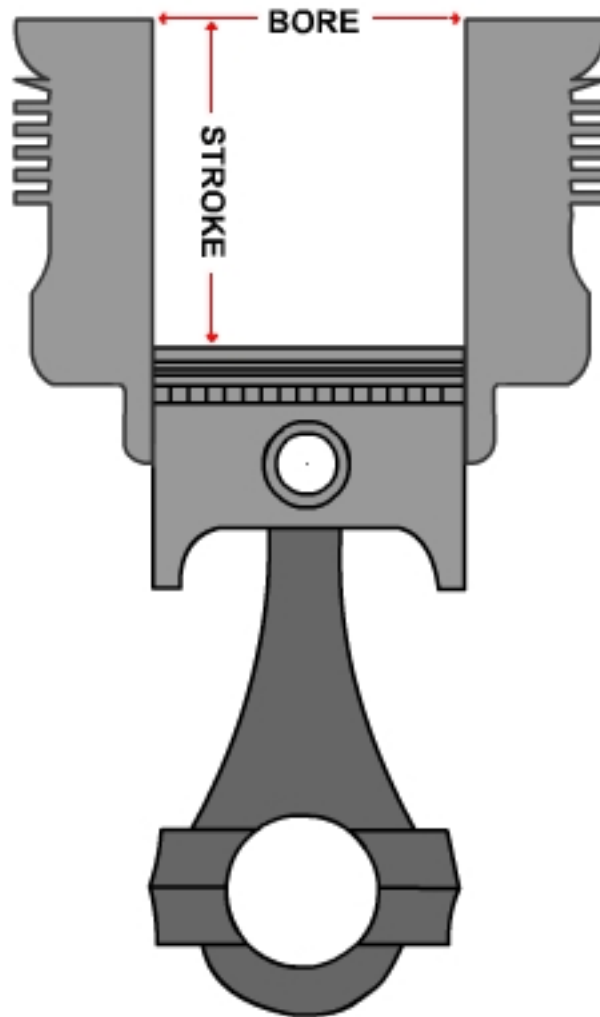
**Photo 3** shows another view of the Mitsubishi engine that I had inspected. My visual examination of the engine housing revealed the housing to be of serviceable/satisfactory condition. There was no crack and/or hole observed on the engine housing.



**Photo 4** shows the engine number engraved on the housing of the Mitsubishi engine that I had inspected. The engine number was 4B11BC0151.



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.

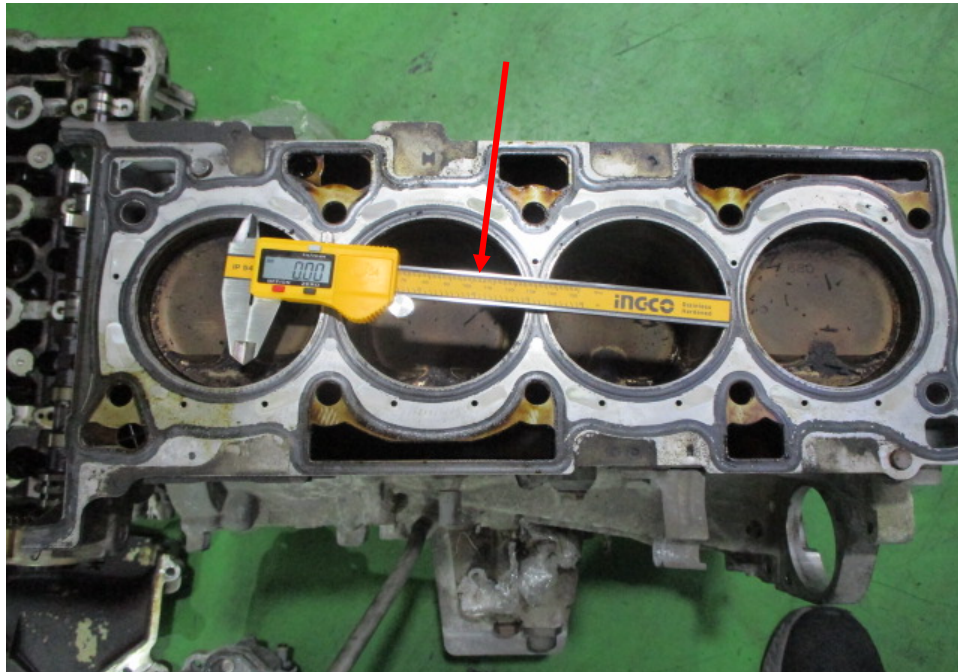


10. The bore and stroke measurements of the 4 cylinders of the Mitsubishi engine are set out in the table below. Photo 5 – 20 thereafter shows the photographs taken during the measurements.

	<b>Bore (mm)</b>	<b>Stroke (mm)</b>
<b>Cylinder 1</b>	85.51	85.98
<b>Cylinder 2</b>	85.87	85.91
<b>Cylinder 3</b>	85.85	85.97
<b>Cylinder 4</b>	85.82	85.97



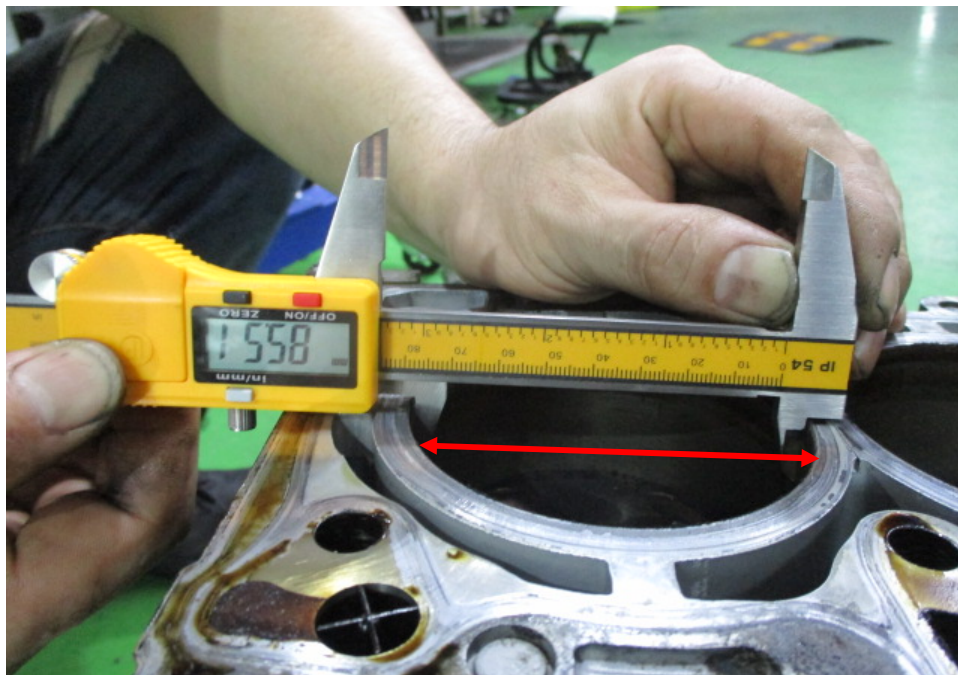
**Photo 5** shows the top block (yellow arrow) of the Mitsubishi engine separated from its bottom block (red arrow). This was to enable me to carry out measurements of its cylinders, in particular the bore and stroke measurements of each cylinder, which typically can be used to determine the engine displacement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



**Photo 6** shows the bottom block of the Mitsubishi engine and the digital Vernier Caliper (arrowed) that was used to measure the bore and stroke measurements of each cylinder. The digital Vernier Caliper was calibrated before the start of the measurements.

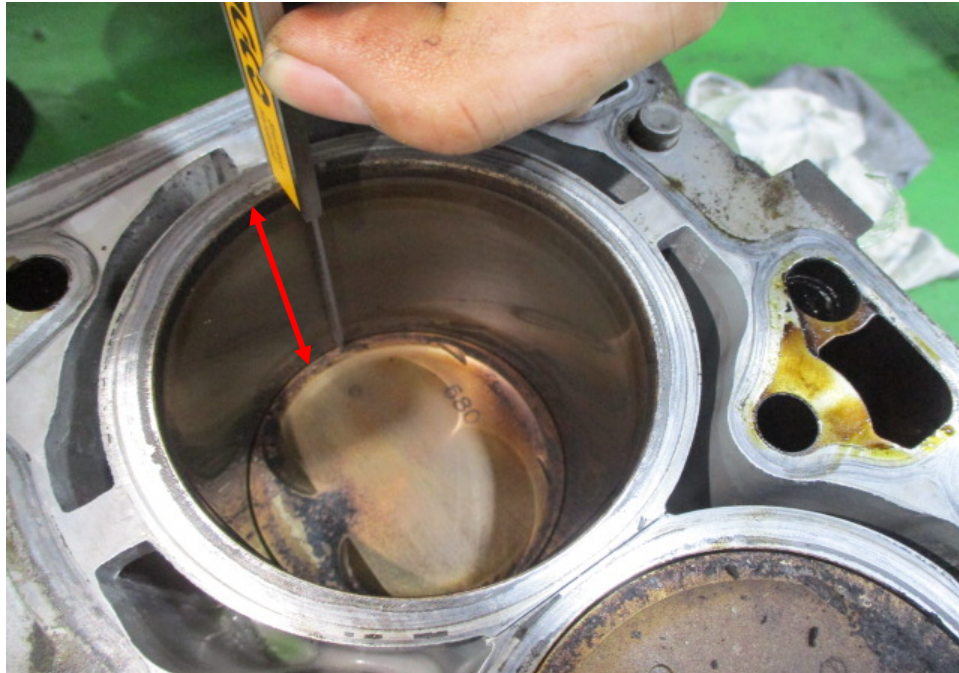


**Photo 7** shows measurement being carried out to the bore of cylinder 1 of the Mitsubishi engine. The measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.



**Photo 8** shows measurement being carried out to the bore (arrowed) of cylinder 1 of the Mitsubishi engine. The bore measurement of cylinder 1 was recorded to be 85.51mm.





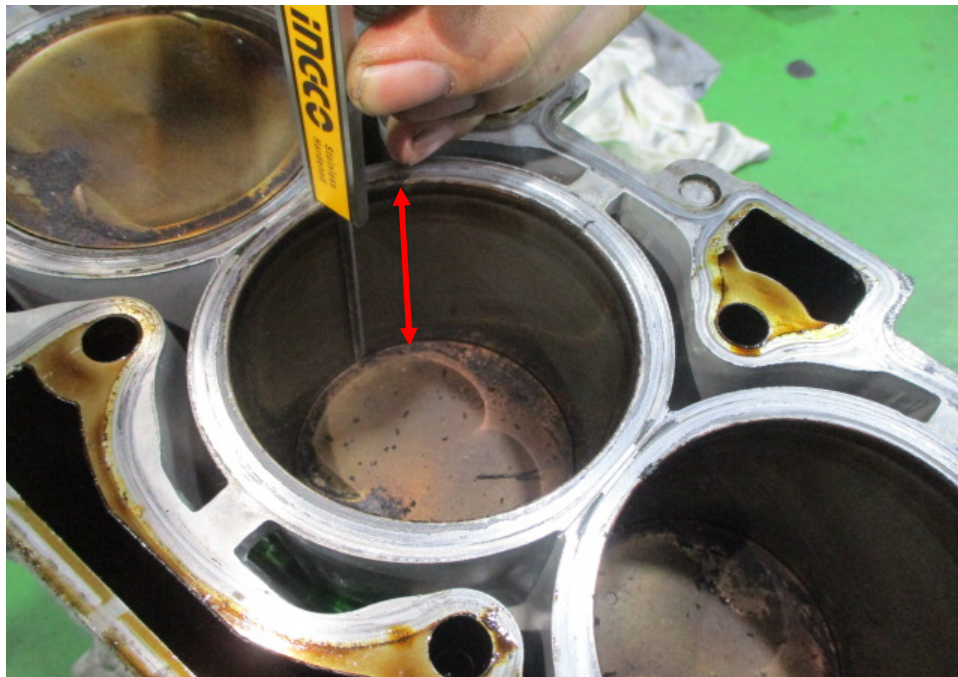
**Photo 9** shows measurement being carried out to the stroke (arrowed) of cylinder 1 of the Mitsubishi engine. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.



**Photo 10** shows the stroke measurement of cylinder 1, which was recorded to be 85.98mm.



**Photo 11** shows measurement being carried out to the bore (arrowed) of cylinder 2 of the Mitsubishi engine. The bore measurement of cylinder 2 was recorded to be 85.87mm.

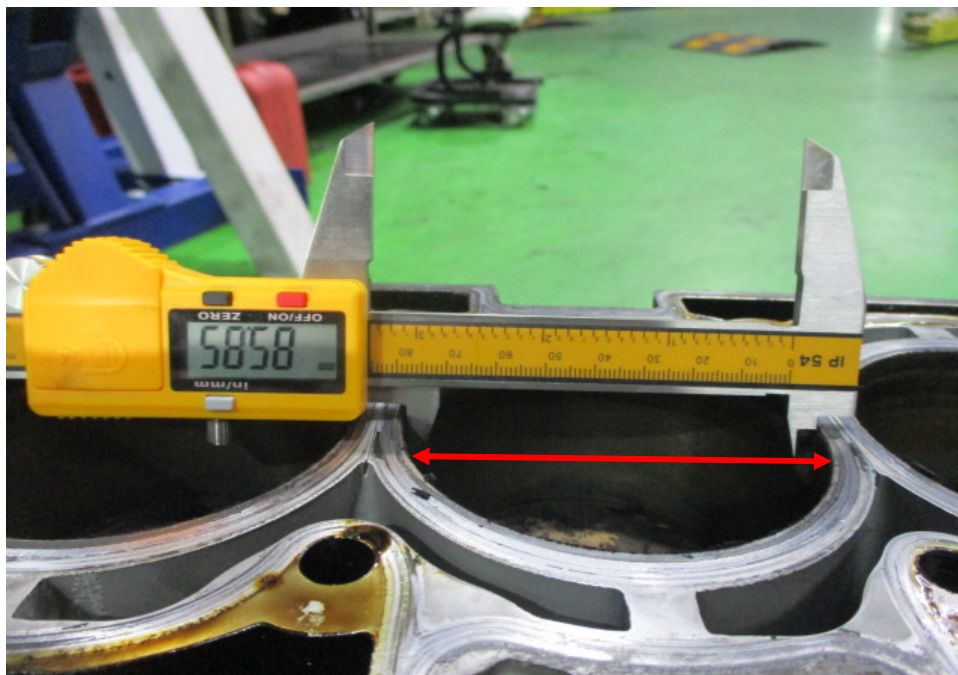


**Photo 12** shows measurement of the stroke (arrowed) for cylinder 2 of the Mitsubishi engine that I had inspected. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated before the start of measurements.

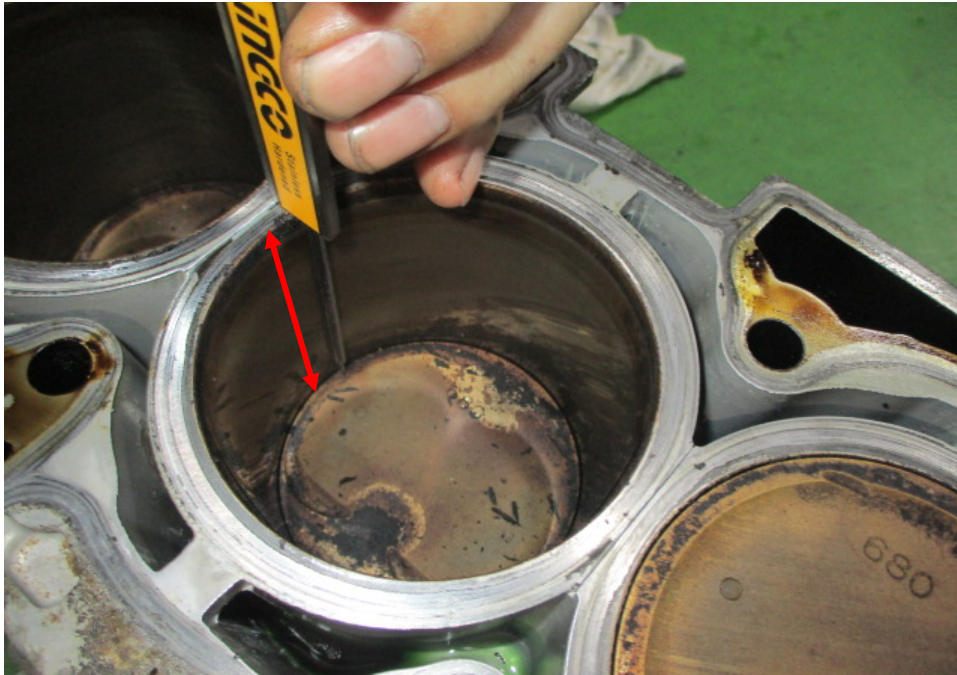




**Photo 13** shows the stroke measurement of cylinder 2, which was recorded to be 85.91mm.



**Photo 14** shows measurement being carried out to the bore (arrowed) of cylinder 3 of the Mitsubishi engine. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated before the start of measurements. The bore measurement of cylinder 3 was recorded to be 85.85mm.

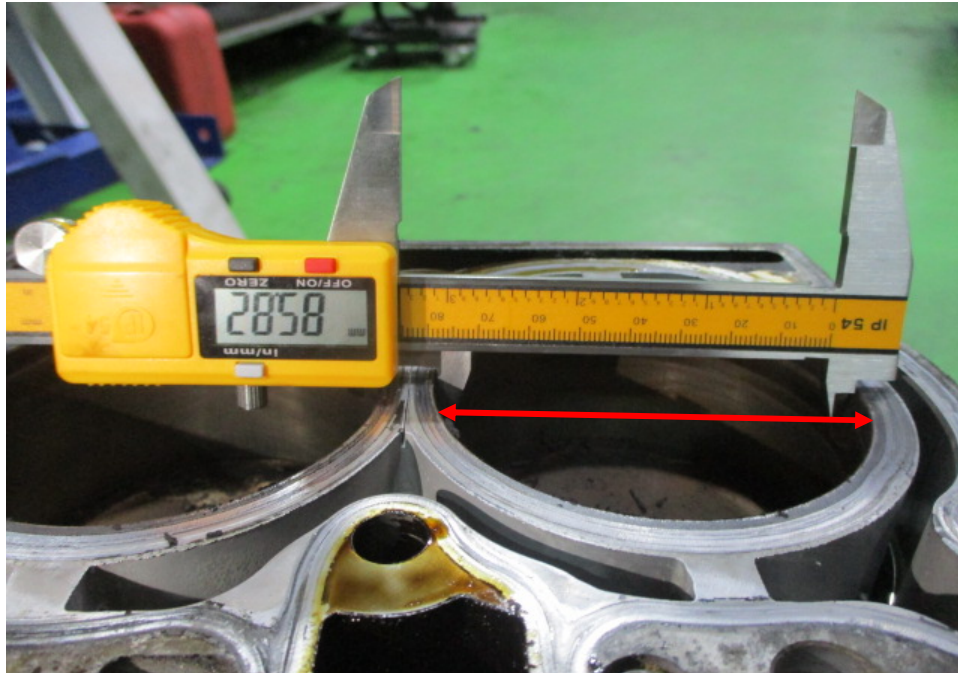


**Photo 15** shows measurement of the stroke (arrowed) for cylinder 3 of the Mitsubishi engine that I had inspected. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated before the start of measurements.

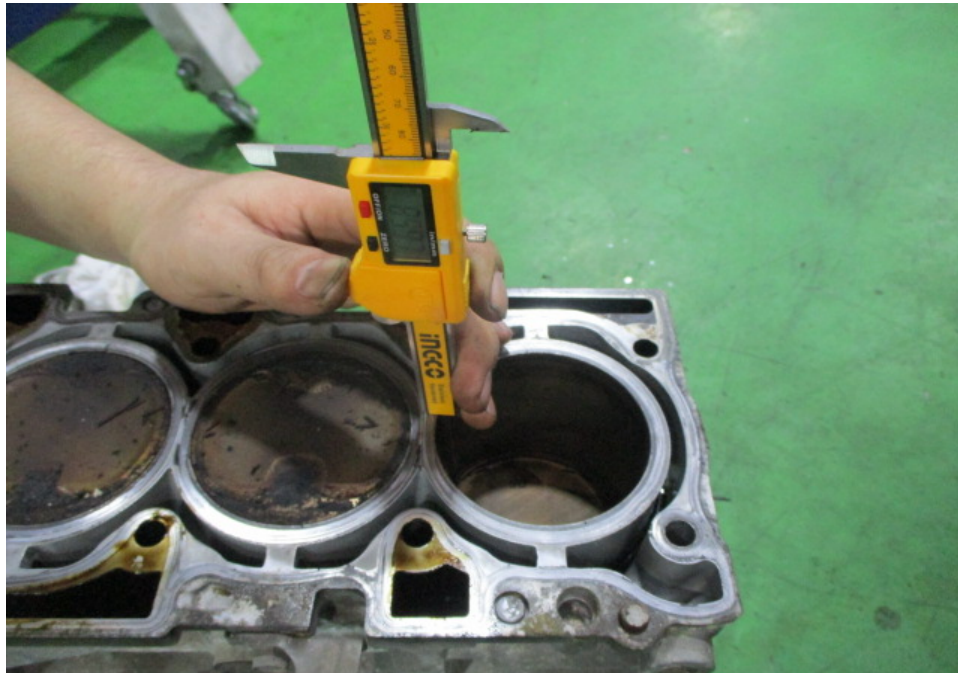


**Photo 16** shows the stroke measurement of cylinder 3, which was recorded to be 85.97mm.

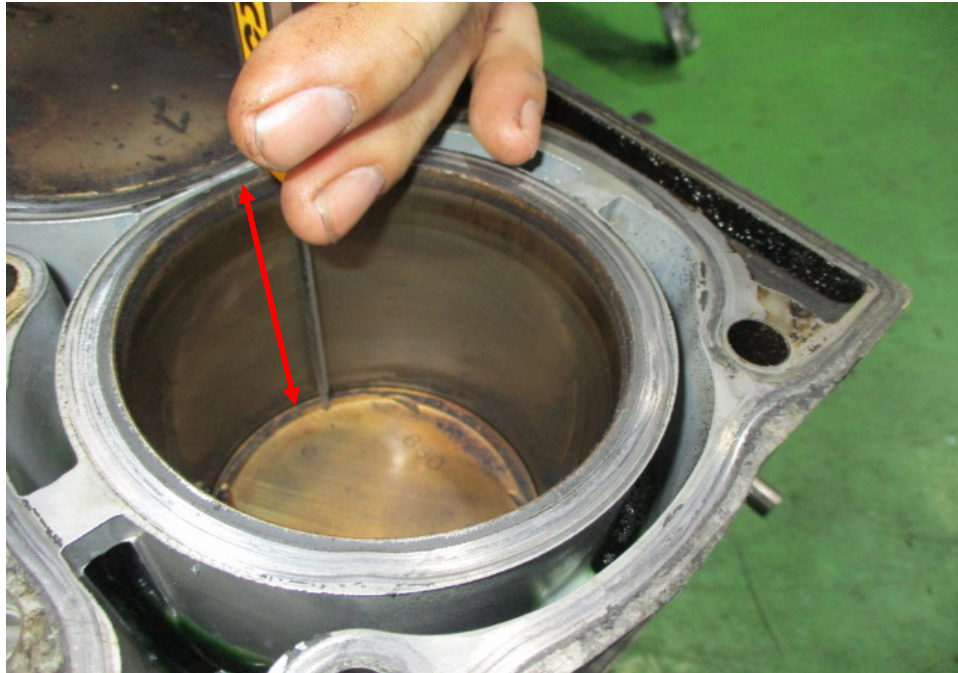




**Photo 17** shows measurement being carried out to the bore (arrowed) of cylinder 4 of the Mitsubishi engine. The bore measurement of cylinder 4 was recorded to be 85.82mm.



**Photo 18** shows measurement being carried out to the stroke of cylinder 4 of the Mitsubishi engine. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated prior to the start of measurements.



**Photo 19** shows measurement being carried out to the stroke (arrowed) of cylinder 4 of the Mitsubishi engine. The bore and stroke measurements of the Mitsubishi engine were carried out using a digital Vernier Caliper that was calibrated prior to the start of measurements.



**Photo 20** shows the stroke measurement of cylinder 4, which was recorded to be 85.97mm.



## Mitsubishi 4B11 Engine Technical Specifications

11. In order to determine whether the Mitsubishi engine that I had inspected was a Mitsubishi 4B11 model engine, I had compared the measurements of the bore and stroke of the Mitsubishi engine with the bore size and stroke size of the Mitsubishi 4B11 model engine, as stated in its technical specifications. According to the technical specification of the Mitsubishi 4B11 model engine, the bore size and stroke size was 86.00mm and 86.00mm respectively.
12. Upon comparison, I note that the bore and stroke measurements of the Mitsubishi 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 Mitsubishi 4B11 model engine. The measurements recorded from the Mitsubishi engine were all slightly lesser (at maximum 0.49mm lesser). This difference can be attributed to carbon accumulation within the cylinders, as the Mitsubishi engine that I had inspected was a used engine.
13. Since the bore and stroke of the Mitsubishi engine had corresponded to a Mitsubishi 4B11 model engine, the engine displacement of the Mitsubishi engine that I had inspected would then be 1998cc. See technical specifications of Mitsubishi 4B11 model engines below.

## 4B11 Engine Specs

<i>Engine type</i>	Inline 4-cylinder DOHC
<i>Displacement</i>	2.0 L (1,998 cc) ←
<i>Bore</i>	86 mm (3.39 in) ←
<i>Stroke</i>	86 mm (3.39 in) ←

## Conclusion

14. In summary, the Mitsubishi engine that I had inspected was a Mitsubishi 4B11 model engine. The engine number engraved on the housing of this Mitsubishi engine was 4B11BC0151. The engine displacement of the Mitsubishi engine is 1998cc as per the technical specification.



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