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Your Ref: Toyota Engine (number 2ZR2A66440)
Our Ref : CI/TP18015616/D

27 August 2018

Allswell Motor Traders
25 Defu Lane 9
Singapore 539266

INSPECTION REPORT OF A TOYOTA ENGINE WITH NUMBER 2ZR2A66440

1. I refer to your request on 17 August 2018 to conduct a physical inspection of a Toyota engine with number 2ZR2A66440.

2. The purpose of this inspection was to primarily determine whether the Toyota engine is a Toyota Voxy Hybrid 1.8CVT model engine.

3. Following the request, I had carried out a physical inspection of the Toyota engine on 23 August 2018 at the premise of Soon Seng Company, 160 Sin Ming Drive #04-05, Sin Ming Autocity, Singapore 575722.

4. Measurements of the bore and stroke of the Toyota engine were obtained and thereafter compared with the bore and stroke measurements as stated in the technical specifications of a Toyota Voxy Hybrid 1.8CVT model engine.

5. I now set out below my observations and comments.

Inspection of the Toyota Engine

6. Firstly, I note that the Toyota engine was a new 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 2ZR2A66440.

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

8. Upon my request, the Toyota 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 Toyota engine that I had inspected. The Toyota engine was observed to be a new engine and was not fitted on any motor car. My visual examination of the engine housing revealed no crack and/or hole on the engine housing.

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

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

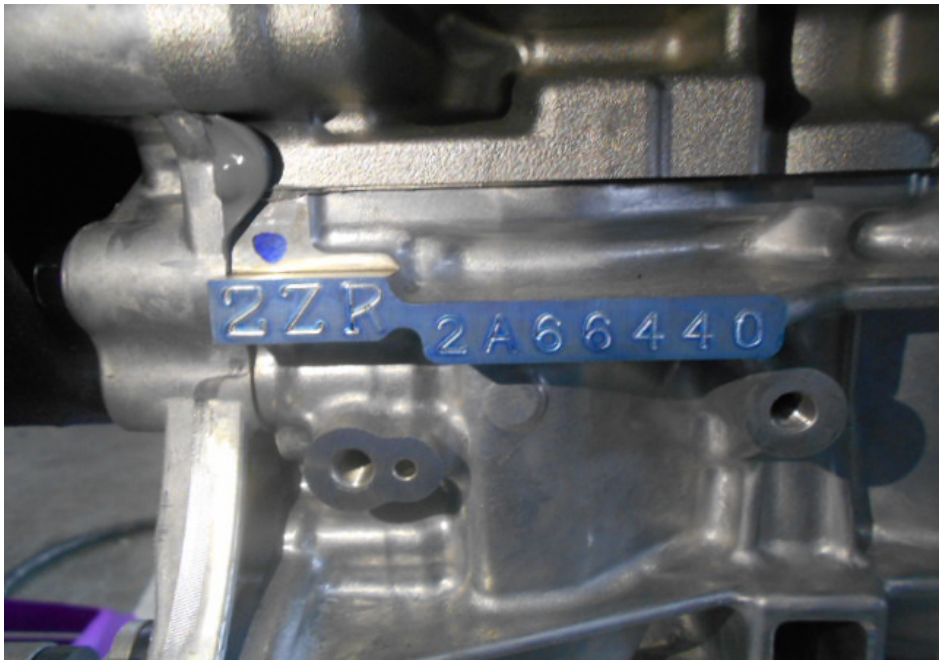
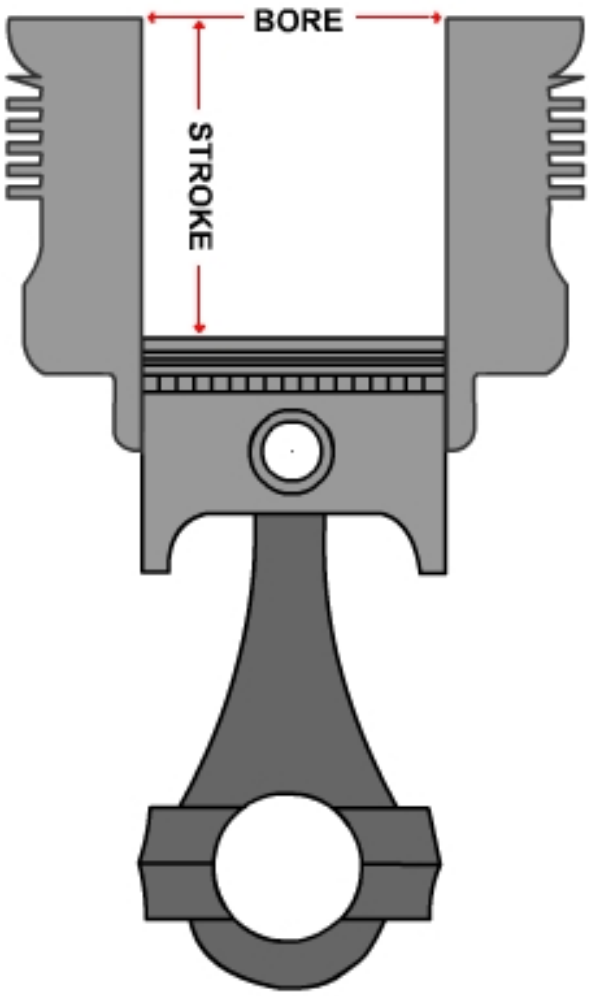


Photo 4 shows the engine number engraved on the housing of the Toyota engine that I had inspected. The engine number was 2ZR2A66440.

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 Toyota engine are set out in the table below. Photo 5 – 18 thereafter shows the photographs taken during the measurements.

	Bore (mm)	Stroke (mm)
Cylinder 1	80.50	88.30
Cylinder 2	80.50	88.30
Cylinder 3	80.50	88.30
Cylinder 4	80.50	88.30

Photo 5 shows the bottom block of the Toyota engine. The top block was separated from the bottom block to facilitate my measurements of the bore and stroke of the Toyota engine. The measurements were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 6 shows measurement being carried out to the bore (arrowed) of cylinder 1 of the Toyota engine. The bore measurement of cylinder 1 was recorded to be 80.50mm.

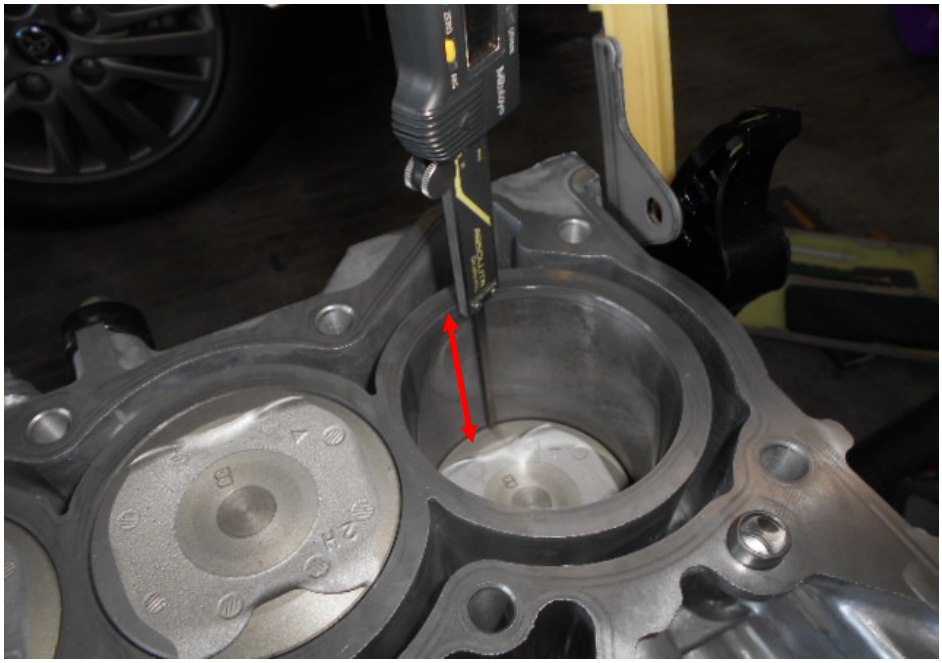


Photo 7 shows measurement being carried out to the stroke (arrowed) of cylinder 1 of the Toyota engine. The bore and stroke measurements of the Toyota engine were carried out using a digital Vernier Caliper that was calibrated before the start of the measurements.

Photo 8 shows the stroke measurement of cylinder 1, which was recorded to be 88.30mm.

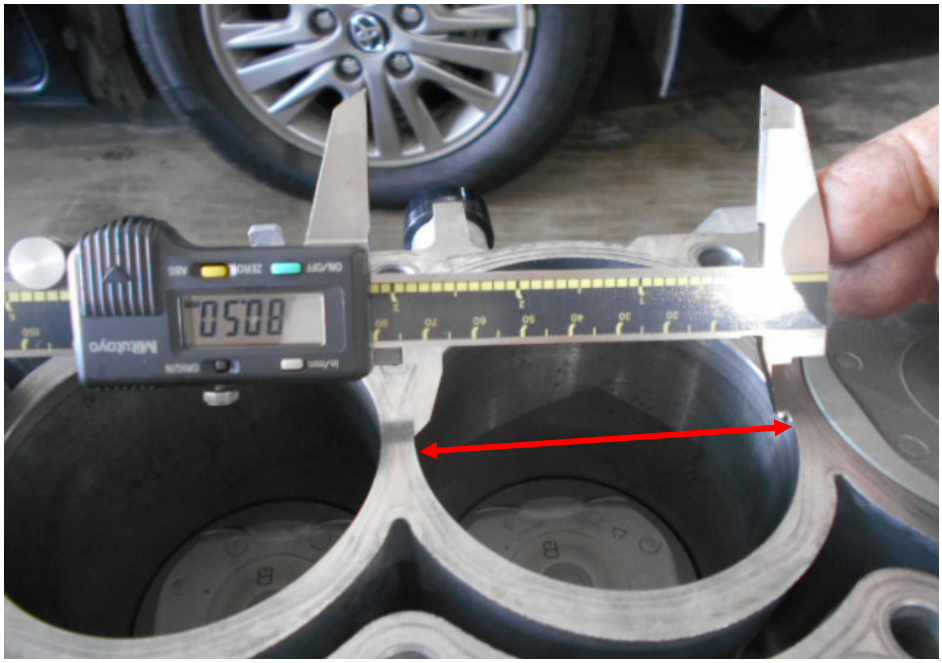


Photo 9 shows measurement being carried out to the bore (arrowed) of cylinder 2 of the Toyota engine. The bore measurement of cylinder 2 was recorded to be 80.50mm.

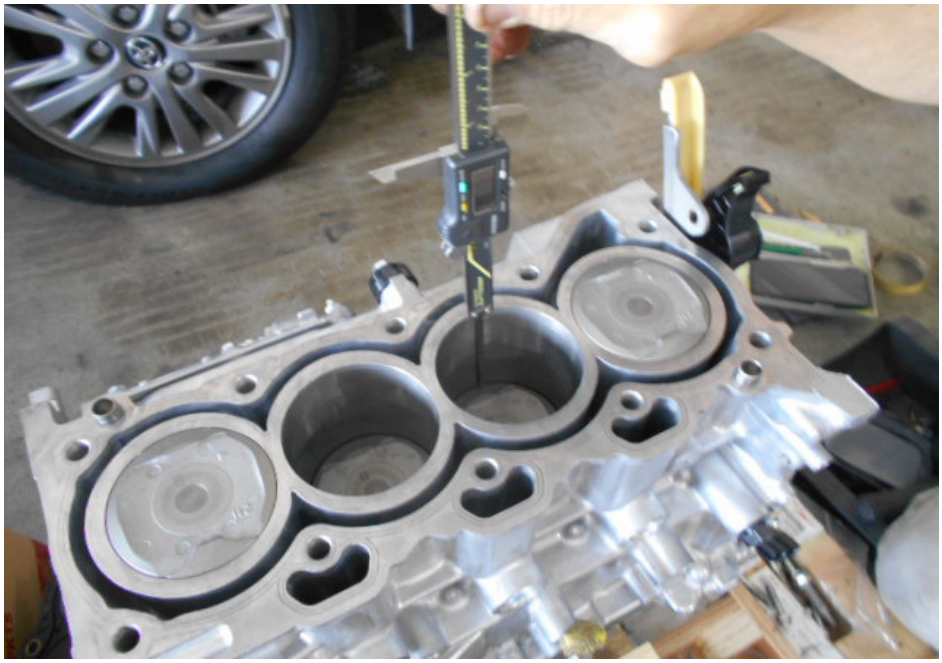


Photo 10 shows measurement of the stroke of cylinder 2 of the Toyota engine that I had inspected. The bore and stroke measurements of the Toyota engine were carried out using a digital Vernier Caliper, which was calibrated before the start of measurements.

Photo 11 shows the stroke measurement of cylinder 2, which was recorded to be 88.30mm.

Photo 12 shows measurement being carried out to the bore of cylinder 3 of the Toyota engine. The bore and stroke measurements of the Toyota engine were carried out using a digital Vernier Caliper. The bore measurement of cylinder 3 was recorded to be 80.50mm.

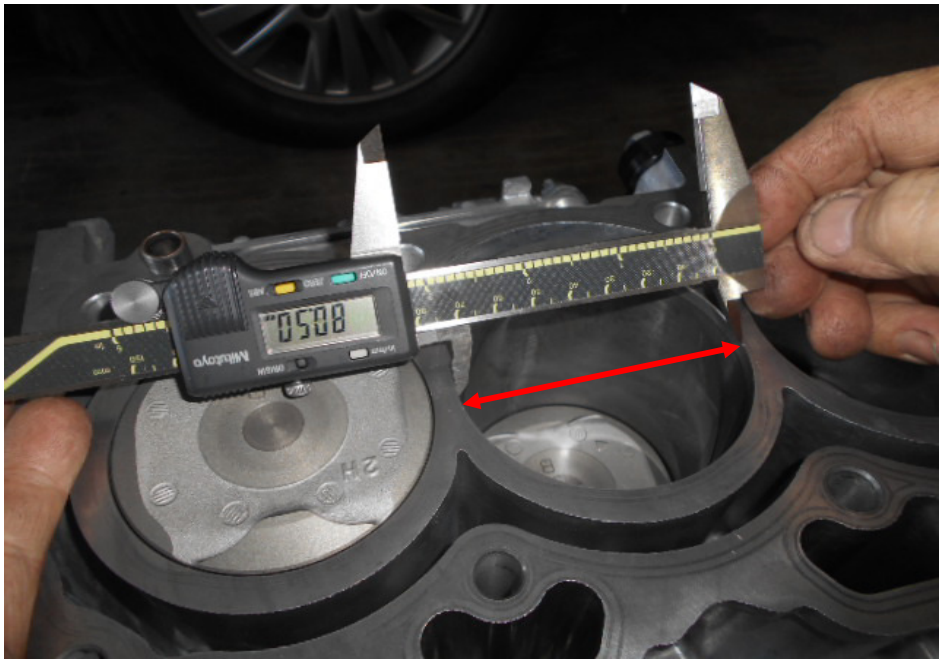


Photo 13 shows measurement being carried out to the bore (arrowed) of cylinder 3 of the Toyota engine. The bore measurement of cylinder 3 was recorded to be 80.50mm.

Photo 14 shows measurement of the stroke (arrowed) of cylinder 3 of the Toyota engine that I had inspected. The bore and stroke measurements of the Toyota engine were carried out using a digital Vernier Caliper that was calibrated before the start of measurements.

Photo 15 shows the stroke measurement of cylinder 3, which was recorded to be 88.30mm.

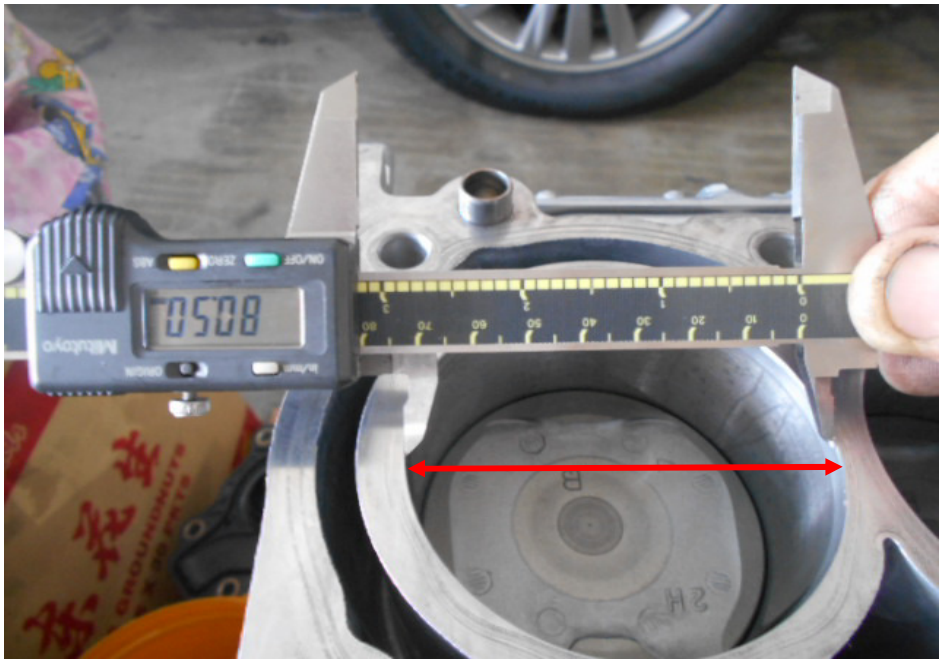


Photo 16 shows measurement being carried out to the bore (arrowed) of cylinder 4 of the Toyota engine. The bore and stroke measurements of the Toyota engine were carried out using a digital Vernier Caliper. The bore measurement of cylinder 4 was recorded to be 80.50mm.

Photo 17 shows measurement being carried out to the stroke of cylinder 4 of the Toyota engine. The bore and stroke measurements of the Toyota 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 4, which was recorded to be 88.30mm.

Toyota Engine Technical Specifications

11. To determine whether the Toyota engine that I had inspected was a Toyota Voxy Hybrid 1.8CVT model engine, I had compared the measurements of the bore and stroke of the Toyota engine, obtained during my inspection, with the bore and stroke measurements of the Toyota Voxy Hybrid 1.8CVT model engine, as stated in its technical specifications. According to the technical specification, the bore and stroke measurement of the Toyota Voxy Hybrid 1.8CVT model engine were 80.50mm and 88.30mm respectively.

12. Upon comparison with the technical specification, I note that the bore and stroke measurements of the Toyota 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 the Toyota Voxy Hybrid 1.8CVT model engine. See technical specifications of Toyota B16A model engines below.

Toyota Voxy Hybrid 1.8 X (A)

Engine

Engine capacity	1,797 cc
Engine type	4-cylinder in-line 16-valve DOHC
Compression ratio	13
Bore x Stroke	(80.5 x 88.3) mm ←
Fuel type	Petrol

Performance

Power	73kW (98 bhp)
Torque	142 Nm
Acceleration	unknown
Top speed	unknown

Conclusion

13. In summary, the Toyota engine that I had inspected is a Toyota Voxy Hybrid 1.8CVT model engine. The engine number engraved on the housing of this Toyota engine was 2ZR2A66440.

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