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: TP/IP/21525/2019 03rd June 2019
Our Ref : CI/TPD19008246/P

General Investigation Team
Traffic Police Department
Singapore Police Force
10 Ubi Avenue 3
Singapore 408865

MECHANICAL INSPECTION REPORT OF MOTOR TAXI SHB 8760G

1. I refer to your request on 29th April 2019 to conduct a physical inspection of a motor taxi bearing registration number SHB 8760G (herein referred to as "**Motor Taxi**"), which was involved in a road traffic accident on 29th March 2019.

2. The objective of the inspection is to determine if there was any possible mechanical failure to the Motor Taxi that may have contributed to the accident.

3. Following the request, I had carried out a physical inspection of the Motor Taxi on 27th May 2019 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. I now set out below my observations and comments with respect to this inspection.

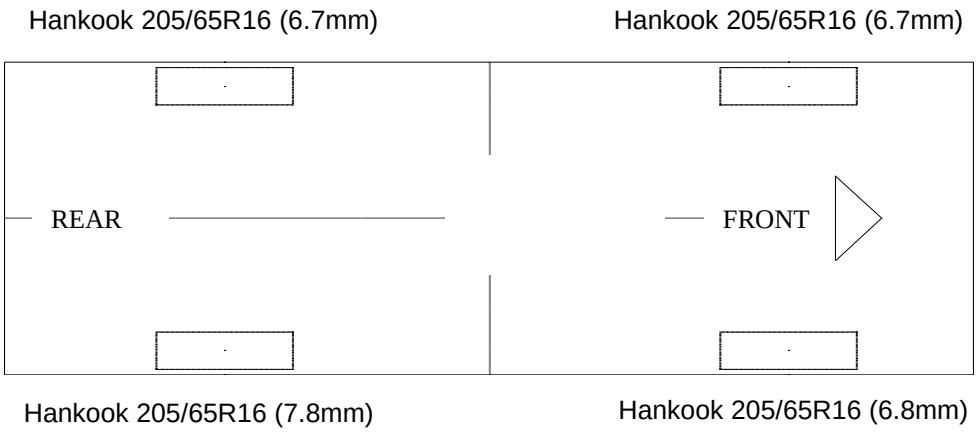
General Condition

4. The mileage of the Motor Taxi at the time of my inspection was not recorded due to damage to its ignition system arising from the accident.

5. The Motor Taxi had sustained impact damage that was confined to its frontal body. Its front windscreen, front bumper, front bonnet, front headlamps, front grille, front bumper reinforcement, front support panel and front fenders were amongst the body parts that were damaged as a result of the accident.

Tyres and Wheel Rims

6. The condition of the Motor Taxi's 4 tyres was observed to be in serviceable condition. The 4 tyres were also sufficiently inflated for vehicular operation. I did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 4 tyres. The tyre brand, tyre size and remaining tread depth of the 4 tyres were recorded as follows:-



7. The Motor Taxi's 4 tyres were observed to be wrapped around standard wheel rims that were found to be relatively undamaged. See photo 1 – 8 below.

Photo 1 shows a general view of the front body of the Motor Taxi at the time of my inspection. The Motor Taxi was observed to have sustained impact damage that was confined to its frontal body. Its front windscreen, front bumper, front bonnet, front left headlamp and front left fender were amongst the body parts that were damaged as a result of the accident. The mileage of the Motor Taxi was not recorded due to the extent of damage, which had affected the ignition system of the Motor Taxi.

Photo 2 shows a general view of the front right body of the Motor Taxi at the time of my inspection. The Motor Taxi was observed to have sustained impact damage that was confined to its frontal body. Its front bumper and front bonnet were amongst the body parts that were damaged as a result of the accident. The mileage of the Motor Taxi was not recorded due to the extent of damage, which had affected the ignition system of the Motor Taxi.

Photo 3 shows a general view of the front left body of the Motor Taxi at the time of my inspection. The Motor Taxi was observed to have sustained impact damage that was confined to its frontal body. Its front windscreen, front bumper, front bonnet, front left headlamp and front left fender were amongst the body parts that were damaged as a result of the accident

Photo 4 shows a general view of the Motor Taxi's rear right body at the time of my inspection. The rear body of the Motor Taxi was observed to be unaffected.

Photo 5 shows the condition of the front left tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 6.7mm. The tyre, which was wrapped around standard wheel rim, was also observed to be sufficiently inflated for vehicular operation. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the tyre.

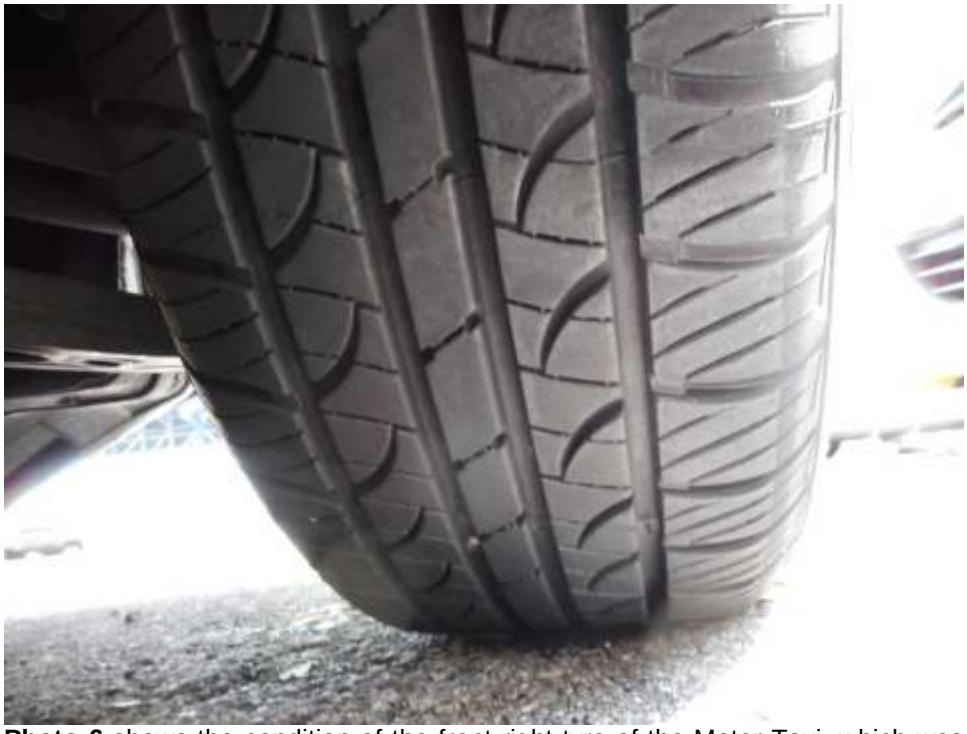


Photo 6 shows the condition of the front right tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 6.8mm. The tyre, which was wrapped around standard wheel rim, was also observed to be sufficiently inflated for vehicular operation.

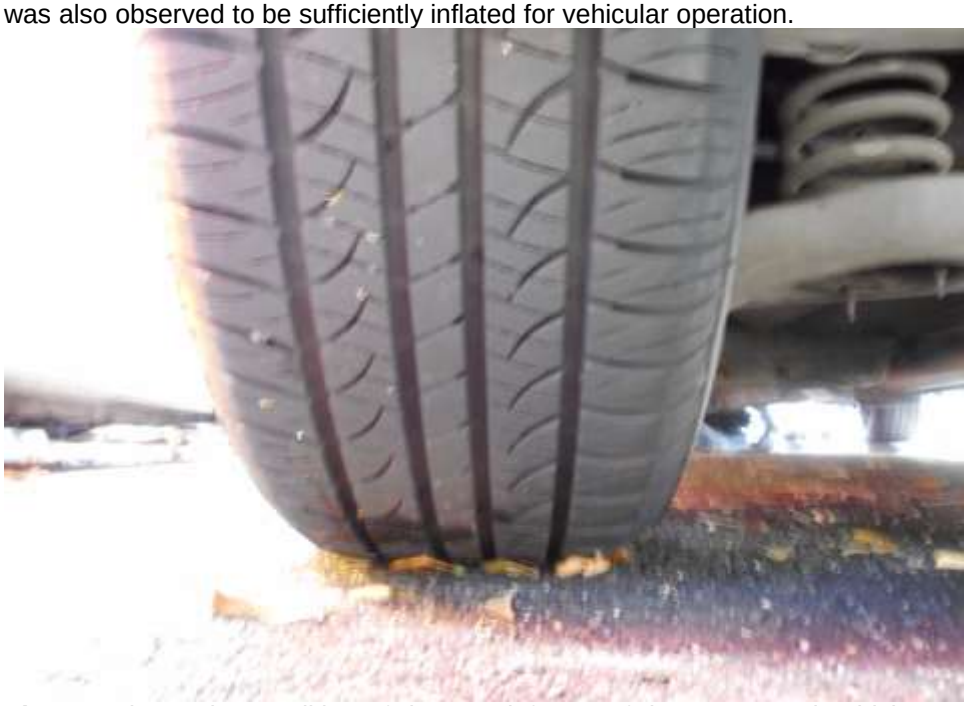


Photo 7 shows the condition of the rear left tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 6.7mm. The tyre, which was wrapped around standard wheel rim, was also observed to be sufficiently inflated for vehicular operation. The 4 tyres of the Motor Taxi were wrapped around standard wheel rims that were without any damage.

Photo 8 shows the condition of the rear right tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 7.8mm. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the tyre.

Engine Compartment & Operating Fluids

8. The impact from the collision had affected the engine compartment of the Motor Taxi. Parts towards the front of the engine compartment were observed to be damaged. The locking mechanism and the hinges of the Motor Taxi's front bonnet were also affected and I was unable to unlock and lift the front bonnet to carry out examination of the Motor Taxi's engine compartment. The various operating fluids like its engine coolant, brake fluid and transmission fluid etc were hence unable to be inspected. As a result of the accident.

9. My subsequent checks on the underside of the various steering components which had included the steering rack and pinion, tie rods, tie rod ends and ball joints revealed that these components are intact. See photo 9 & 10 below.

Photo 9 shows the close up view of the Motor Taxi's engine compartment. Parts towards the front of the engine compartment were observed to be damaged. The bonnet locking mechanism and the hinges of the Motor Taxi's front bonnet were damaged and unable to be opened as a result of the accident.

Photo 10 shows the close up view of the Motor Taxi's engine compartment. Parts that were mainly towards the front of the engine compartment were pushed inwards as a result of the impact force onto the frontal body of the Motor Taxi. The front support panel, front bumper reinforcement, cooling fan, air condenser, radiator and battery were all observed to have been damaged.

Steering System & Braking System

10. For this case, static tests to the Motor Taxi's steering system and braking system were not able to be conducted (engine unable to be started). I was however able to carry out visual examination of the various mechanical components of the steering system and braking system.

11. The steering wheel, steering column, steering ball joints, steering rack and pinion were all observed to be in good general condition and securely attached to the front left wheel and front right wheel without visible damage. See photo 11 & 12 below.

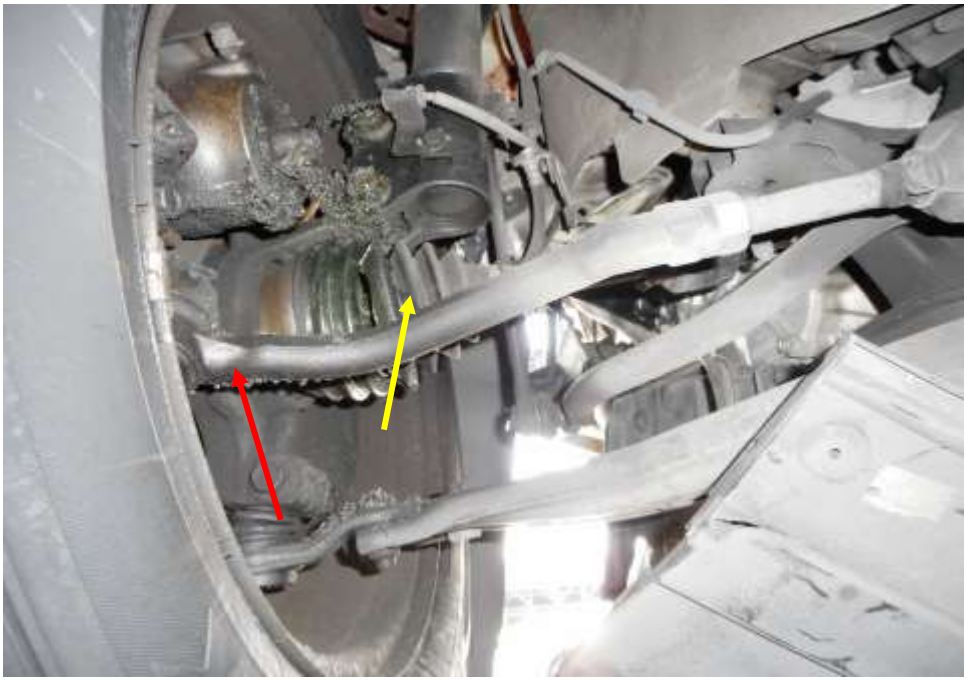


Photo 11 shows the various undercarriage components at the front left wheel of the Motor Taxi, in particular the steering tie rod (red arrow) and front left drive shaft (yellow arrow). There was a broken rubber boot found at the outer side of the drive shaft CV joint. However the various steering components were all found to be intact

Photo 12 shows the various undercarriage components at the front right wheel of the Motor Taxi, in particular the steering tie rod (arrowed). The various steering components were all found to be intact

12. With regard to the braking system, although I was also not able to carry out any tests given that the Motor Taxi's engine could not be started due to damage to its ignition as a result of the accident, my visual inspection of the various mechanical components of the braking system to the parts like the, brake calipers and brake hoses at the 4 wheels are amongst others were all observed to be intact and undamaged. There was also no sign(s) or indication(s) of brake fluid leak observed at the 4 wheels of the Motor Taxi. See photo 13 & 14 below

Photo 13 shows the various undercarriage components at the rear left wheel of the Motor Taxi, in particular the brake hose (arrowed). I did not observe any leakage of brake fluid at the 4 wheels of the Motor Taxi. My visual inspection of the various mechanical components of the Motor Taxi's braking system revealed all to be intact and without visible damage.

Photo 14 shows the various undercarriage components at the rear right wheel of the Motor Taxi, in particular the brake hose (arrowed). I did not observe any leakage of brake fluid at the 4 wheels of the Motor Taxi. My visual inspection of the Motor Taxi's various mechanical braking components revealed all to be intact without visible damage.

Photo 17 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Taxi. There was no brake fluid leak observed. Visual examination of the various components of the braking system like the brake caliper (circled), revealed all to be intact and without visible damage.

Photo 18 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Taxi. There was grease found on the brake caliper, it was caused by the broken boot of the drive shaft which spattered grease around the brake caliper (yellow arrow). However there was no brake fluid leak observed on and around the brake caliper itself. Visual examination of the various components of the braking system like the brake caliper (circled), had revealed all to be intact and without visible damage.

Electronic Safety / Warning Indicators

13. The Motor Taxi's automatic self-test of the functionality of its various operating systems like the Anti-Brake Lock System (ABS) and Supplemental Restraint System (SRS) during cranking of the engine was not able to be initiated as the engine of the Motor Taxi could not be started due to damage to its ignition system arising from the accident.

Operational Behaviour of the Motor Taxi

14. Operational test to primarily determine whether there was any abnormality to the engine system, transmission system and braking system of the Motor Taxi could not be conducted given the extent of damage that it had sustained (engine could not be started).

Conclusion

15. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Taxi that may have contributed to the accident. The extent of damage that it had sustained had prevented me from carrying out any operational test(s) and/or static test(s) to its engine system, transmission system, steering system, braking system and suspension system.

16. The 4 tyres fitted on the Motor Taxi were also found to be in serviceable condition. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 4 tyres. The 4 tyres were sufficiently inflated for vehicular operation with remaining tread depth of approximately 6.7 to 7.8mm.

Sherwin Beh
Technical Investigator

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