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Fatal Accident Investigation Team

Traffic Police Department
Singapore Police Force
10 Ubi Avenue 3
Singapore 408865

MECHANICAL INSPECTION REPORT OF MOTOR CAR SJG 2498D

1. I refer to your request on 22 August 2017 to conduct a physical inspection of a motor car bearing registration number SJG 2498D (herein referred to as "**Motor Car**"), which was involved in a fatal road traffic accident on 09 July 2017.
2. The purpose of this inspection is to primarily determine if there was any possible mechanical failure to the Motor Car that may have contributed to the accident.
3. Following the request, I had carried out a physical inspection of the Motor Car on 22 September 2017 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 Car at the time of my inspection was not recorded due to a flat battery. I was not able to lift the front bonnet to access the battery as the front bonnet lock was damaged.
5. The Motor Car had sustained extensive impact damage at its left front body. The impact force was relatively significant causing severe damage to its front bumper, front left headlamp, front left fender, front left wheel house, front bonnet and front left door amongst others. Its front windscreen was observed to be cracked at the left side while both its front airbags were observed to be activated as a result of the accident. The rear left door and roof panel were also affected.
6. Several parts and components towards the left side of the engine compartment were also observed to have been damaged as a result of the impact force. See photo 1 – 4 below.



Photo 1 shows a general view of the front left body of the Motor Car at the time of my inspection. The Motor Car was observed to have sustained extensive impact damage at its left front body. The impact force was relatively significant causing severe damage to its front bumper, front left headlamp, front left fender, front left wheel house, front bonnet and front left door amongst others.



Photo 2 shows a closer view of the extent of damage at the left front body of the Motor Car. Its front bonnet, front left fender, front left wheel house and front left door were amongst the body parts that were severely damaged as a result of the impact force.



Photo 3 shows the front windscreen of the Motor Car cracked at the left side. Its front airbags were also activated as a result of the accident.



Photo 4 shows a general view of the rear body of the Motor Car. The rear body and right side body of the Motor Car were observed to be unaffected from the accident.

Tyres and Wheel Rims

7. The front right tyre, rear right tyre and rear left tyre were found to be sufficiently inflated for vehicular operations. These 3 tyres were observed to be in serviceable condition with remaining tread depth of approximately 4mm each. There was also no cut, tear or burst mark(s) observed on these tyres. The front left tyre, on the other hand, was observed to be cut and deflated as a result of the accident. The remaining tread depth of the front left tyre was approximately 4mm, similar to the other 3 tyres.
8. All 4 tyres of the Motor Car were wrapped around alloy wheel rims. The front left wheel rim was broken as a result of the accident while the remaining 3 wheel rims were found to be without any significant damage. See photo 5 – 9 below.

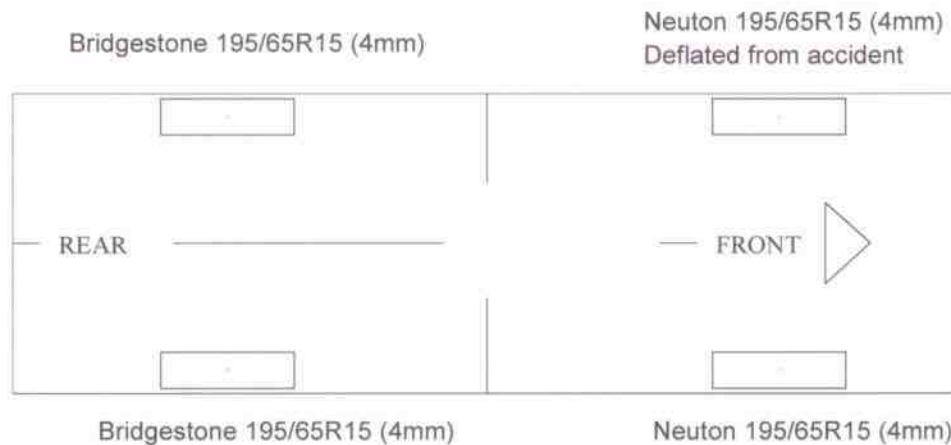




Photo 5 shows the condition of the rear left tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of this tyre. The tyre, which was wrapped around alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 6 shows the condition of the rear right tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of this tyre, which was sufficiently inflated for vehicular operation.



Photo 7 shows the condition of the front right tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. There was also no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of this tyre. The tyre, which was wrapped around a wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 8 shows the condition of the front left tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. The tyre, which was wrapped around alloy wheel rim, was observed to be cut and deflated as a result of the accident.



Photo 9 shows the front left wheel rim of the Motor Car was also cracked and broken as a result of the accident. The remaining 3 wheel rims were found to be without any significant damage.

Engine Compartment & Operating Fluids

9. The impact from the collision had affected the locking mechanism of the Motor Car's front bonnet. I was unable to unlock and lift the front bonnet to carry out examination of the Motor Car's engine compartment. The various operating fluids like its engine coolant and transmission fluid etc were unable to be inspected.
10. I was however able to observe, from gaps around the front bonnet, that the brake fluid of the Motor Car was of sufficient level for operating purposes. The engine oil dip stick was also accessible and I was able to observe that the engine oil was of sufficient level and without contamination for operating purposes.
11. My subsequent checks on the underside of the Motor Car revealed damage to the undercarriage components at the front left wheel of the Motor Car. Components like the front left suspension, front left lower arm, front left drive shaft, front left steering tie rod and front stabilizer bar were all damaged. See photo 10 – 15 below.



Photo 10 shows the brake fluid reservoir of the Motor Car at the time of my inspection. The brake fluid was observed to be of sufficient level for operating purposes. This was observed from gaps around the front bonnet given that the front bonnet could not be lifted for me to check the Motor Car's engine compartment.



Photo 11 shows the engine oil dip stick of the Motor Car. I was able to pull the engine oil dip stick from the gaps around the front bonnet. The engine oil of the Motor Car was found to be sufficient level and without contamination for operating purposes.



Photo 12 shows the undercarriage components at the front left wheel of the Motor Car. My checks on the underside of the Motor Car revealed damage to the undercarriage components at the front left wheel of the Motor Car. Components like the front left suspension, front left lower arm (red arrow), front left drive shaft, front stabilizer bar and front left steering tie rod (yellow arrow) were all found to be have been damaged.

Steering System & Braking System

12. For this inspection, I was not able to conduct any tests on the steering system of the Motor Car. This was largely due to the damage to the steering tie rod and other undercarriage components at the front left wheel of the Motor Car.
13. With regard to the braking system, I was also not able to carry out any static tests. This was due to the engine unable to be started (flat battery). However my visual examination of the mechanical parts of the braking system like the brake booster, brake pipes/hoses and brake pedal revealed all the parts to be intact and undamaged. The braking system of the Motor Car was therefore likely to be in serviceable condition at the material time. This was also taking into consideration that the brake fluid was of sufficient level, and also that there was no sign(s) of brake fluid leakage along the brake hoses and brake pipes. See photo 13 - 15 below.



Photo 13 shows the bent steering tie rod (circled) at the front left wheel of the Motor Car. I was not able to conduct any tests on the steering system of the Motor Car due to the damage to the steering tie rod and other undercarriage components at the front left wheel of the Motor Car.

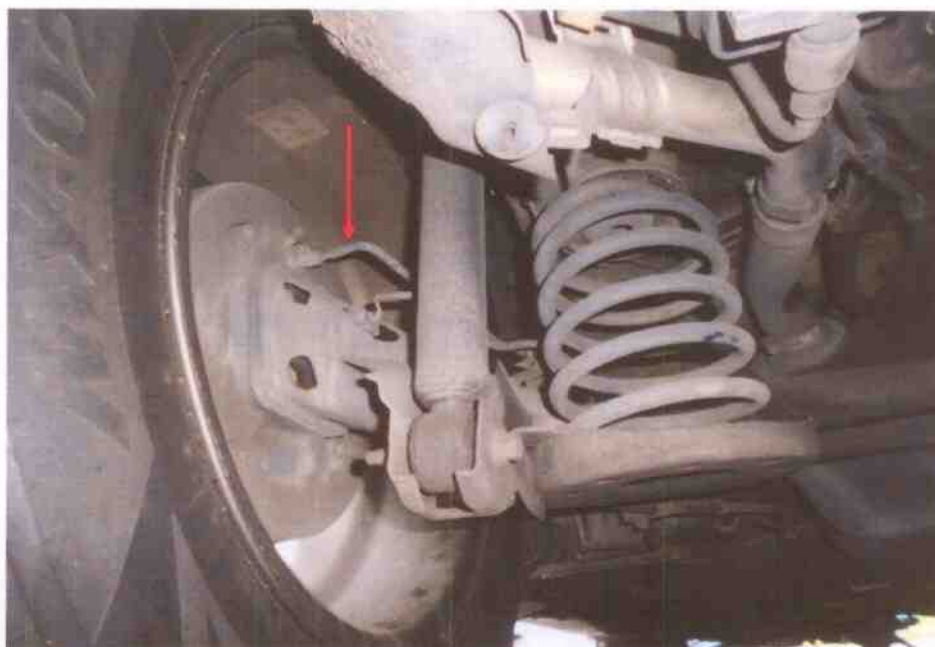


Photo 14 shows the brake pipe (arrowed) at the rear left wheel of the Motor Car. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Car. My visual examination of the mechanical parts of the braking system like the brake booster, brake pipes/hoses and brake pedal revealed all the parts to be intact and undamaged. The braking system of the Motor Car was therefore likely to be in serviceable condition at the material time.



Photo 15 shows the undercarriage components at the front right wheel of the Motor Car, in particular the brake hose (arrowed) and brake caliper (circled). The Motor Car's braking system was likely to be in serviceable condition at the material time of accident as my visual examination of the various mechanical parts in the braking system did not produce any observations that had suggested otherwise. This was also taking into consideration that the brake fluid was of sufficient level for operating purposes.

Electronic Safety / Warning Indicators

14. The Motor Car'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 Car could not be started due to a flat battery.
15. The Supplemental Restraint System (SRS) of the Motor Car was however likely to be in normal operating condition at the material time. The evidence of the deployed driver's airbag and front left passenger airbag indicate that the impact sensors and control module of the Motor Car's SRS were all in serviceable condition at the material time of accident.

Operational Behaviour of the Motor Car

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

Conclusion

17. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Car 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 and braking system.
18. The braking system of the Motor Car was however likely to be in serviceable condition given that my visual examination of the various mechanical parts in the braking system revealed all the parts to be intact and undamaged. This was also taking into consideration that the brake fluid was of sufficient level for operating purposes.
19. The 4 tyres of the Motor Car were found to be in serviceable condition with remaining tread depth of approximately 4mm each. This had included the front left tyre, which was cut and deflated as a result of the accident.



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