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13th June 2019

Fatal accident Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR CAR SJQ 5827R

1. I refer to your request on 29th April 2019 to conduct a physical inspection of a motor car bearing registration number SJQ 5827R (herein referred to as "**Motor Car**"), which was involved in a road traffic accident on 05th March 2019.
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 12th June 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 Car at the time of my inspection was not recorded as its battery and ignition system was affected by the collision.
5. The Motor Car had sustained extensive impact damage. Body parts at its front portion, rear left portion and undercarriage were observed to have been damaged as a result of the accident.
6. Parts towards the front of the engine compartment and undercarriage were also damaged. This had included its front windscreen, front bonnet, both front bonnet hinges, bonnet lock mechanism, front bumper, front number plate, left and right fenders, rear left body panel, engine system, radiator, front right headlamp and its undercarriage rear right lower arm. The driver's air bag, were deployed as a result of the accident. See photo 1 – 12 below.



Photo 1 shows a general view of the rear portion of the Motor Car at the time of my inspection. The rear portion of the Motor Car was observed to have been unaffected by the accident.



Photo 2 shows a general view of the front portion of the Motor Car at the time of my inspection. The Motor Car was also observed to have sustained extensive impact damage at its frontal and undercarriage portion, damaged parts had included its front windscreen, front bonnet, both front bonnet hinges, bonnet lock mechanism, front bumper, front number plate, left and right fenders, rear left body panel, engine system, radiator, front right headlamp and its undercarriage rear right lower arm were amongst the body parts that were observed to have been damaged as a result of the accident.



Photo 3 shows a close up view of the front windscreen of the Motor Car at the time of my inspection. The front windscreen of the Motor Car was observed to have been damaged as a result of the accident



Photo 4 shows a general view of the front right portion of the Motor Car at the time of my inspection. The Motor Car was also observed to have sustained extensive impact damage at its frontal portal, damaged parts had included its, front bonnet, front bumper, right fender, engine system, radiator, front right headlamp (arrowed) were amongst the body parts that were observed to have been damaged as a result of the accident.



Photo 5 shows a close up view of the front portion of the Motor Car at the time of my inspection. The engine system (arrowed) of the Motor Car was observed to have been damaged as a result of the accident



Photo 6 shows a close up view of the front portion of the Motor Car at the time of my inspection. The radiator of the Motor Car was observed to have been damaged by an induced impact as a result of the accident



Photo 7 shows a close up view of the right bonnet hinge of the Motor Car at the time of my inspection. The right bonnet hinge of the Motor Car was observed to have been damaged as a result of the accident rendering the bonnet unable to be opened (arrowed)



Photo 8 shows a close up view of the left bonnet hinge of the Motor Car at the time of my inspection. The left bonnet hinge of the Motor Car was observed to have been damaged as a result of the accident rendering the bonnet unable to be opened (arrowed)



Photo 9 shows a general view of the front left portion of the Motor Car at the time of my inspection. The front left fender and the rear left body panel (arrowed) of the Motor Car was observed to have been damaged as a result of the accident.



Photo 10 shows the close up view of the rear left panel portion of the Motor Car at the time of my inspection. The rear left body panel (arrowed) of the Motor Car was observed to have been damaged as a result of the accident.



Photo 11 shows the close up view of the rear right suspension system of the Motor Car at the time of my inspection. The rear right lower arm (arrowed) of the Motor Car was observed to have been damaged as a result of the accident.



Photo 12 shows a general view of the Motor Car's interior compartment. The driver's air bag, were also deployed as a result of the accident.

Tyres and Wheel Rims

7. The condition of the Motor car's 4 tyres was observed to be in serviceable condition. 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 front right tyre was found to be deflated. However the other 3 tyres were also observed to be sufficiently inflated for vehicular operation. The tyre brand, tyre size and remaining tread depth of the 4 tyres were recorded as follows:-
8. The 4 tyres were observed to be in good condition. 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 remaining tread depth of the 4 tyres was approximately 4.3 – 4.6mm.
9. All 4 tyres of the Motor Car were wrapped around steel wheel rims. The front left wheel rim found to be slightly dented however, the front right wheel rim, rear left and right wheel rim were observed to be cracked due to the collision. See photo 13 – 17 below.

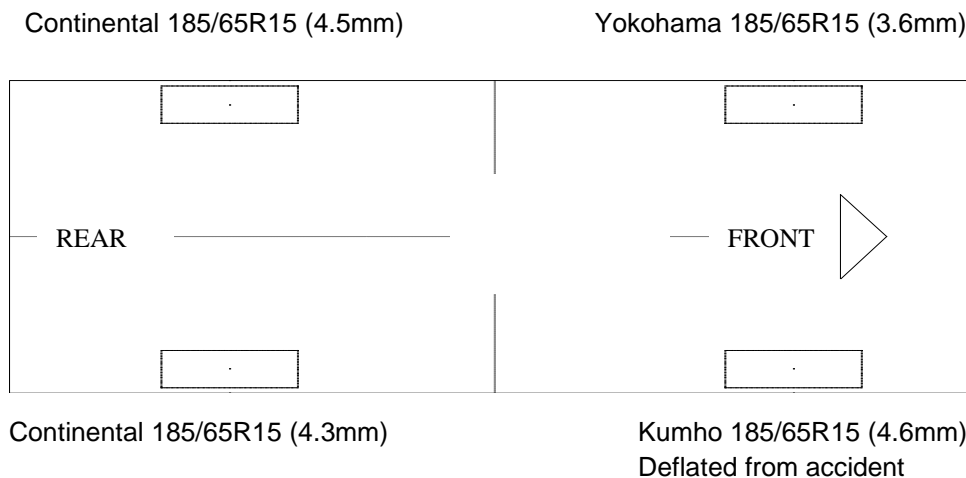




Photo 13 shows the condition of the rear left tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4.6mm. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of this tyre, however observed to be deflated due to damage to the rims.



Photo 14 shows the condition of the front right wheel rim of the Motor Car. The tyre was observed to be sustained damage, dislodged from the rim and deflated as a result of the accident.



Photo 15 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 4.3mm. 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, however observed to sustained minor scratches to the rim as a result of the accident.



Photo 16 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 4.5mm. 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.



Photo 17 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 3.6mm. 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, however observed to be deflated due to damage to the rims.

Engine Compartment & Operating Fluids

10. The impact from the collision had affected the engine compartment of the Motor Car. Parts towards the front of the engine compartment were observed to be damaged. The locking mechanism and the hinges of the Motor Car's front bonnet were also affected and 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, brake fluid and transmission fluid etc were hence unable to be inspected. See photo 18 below.



Photo 18 shows the damage to the locking mechanism (arrowed) Motor Car's front bonnet, rendering it unable to be unlocked and lifted up to carry out examination of the Motor Car's engine compartment as a result of the accident.

Steering System & Braking System

11. For this inspection, I was not able to conduct any tests on the steering system of the Motor Car due to damage to ignition system and the damage to the engine system (refer to photograph 1 above).
12. 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 were all generally in good condition.
13. With regard to the braking system, although I was also not able to carry out any tests given that the Motor Car's engine could not be started due to damage to its ignition and steering system 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 Car. See photo 19 - 24 below.



Photo 19 shows the undercarriage components at the front right wheel of the Motor Car. My checks on the underside of the Motor Car revealed damage to the various undercarriage components, the steering rack and pinion, tie rods, tie rod ends and ball joints (arrowed) revealed that these components were all generally in good condition.



Photo 20 shows the various undercarriage components at the front left wheel of the Motor Car, which had included the steering tie rod (red arrow) and front left drive shaft (yellow arrow). The various undercarriage components of the Motor Car were all found to be intact without any visible damage.

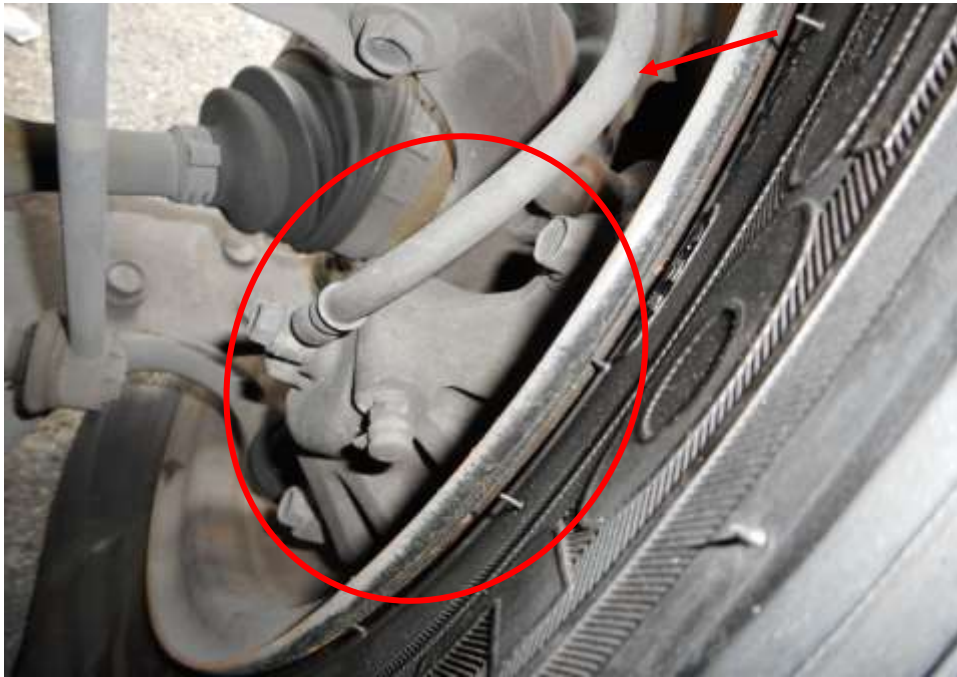


Photo 21 shows the brake hose (arrowed) at the front right wheel of the Motor Car. I did not observe any leakage of brake fluid at the 4 wheels of the Motor Car. My visual inspection of the various mechanical components of the Motor Car's braking system, including its brake caliper (circled), revealed all to be intact and without visible damage.



Photo 22 shows the brake hose (arrowed) at the front left wheel of the Motor Car. I did not observe any leakage of brake fluid at the 4 wheels of the Motor Car. My visual inspection of the various mechanical components of the Motor Car's braking system, including its brake caliper (circled), revealed all to be intact and without visible damage.



Photo 23 shows the various undercarriage components at the rear right wheel of the Motor Car, in particular the brake hose (arrowed). I did not observe any leakage of brake fluid at the 4 wheels of the Motor Car. My visual inspection of the various mechanical components of the Motor Car's braking system revealed all to be intact and without visible damage.



Photo 24 shows the various undercarriage components at the rear left wheel of the Motor Car, in particular the brake hose (arrowed). I did not observe any leakage of brake fluid at the 4 wheels of the Motor Car. My visual inspection of the various mechanical components of the Motor Car's braking system revealed all to be intact and without visible damage.

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 damage to its battery and ignition system arising from the accident.
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 air bag, 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, braking system and suspension system.

18. Although the front right tyre was dislodged from the rim and deflated as a result of the accident. The other 3 tyres of the Motor Car were found to be in serviceable condition with remaining tread depth of approximately 3.6mm to 4.6mm which were deflated as a result of the accident.

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