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17th July 2019

General Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR CAR SJD 3446M

1. I refer to your request on 20th June 2019 to conduct a physical inspection of a Motor car bearing registration number SJD 3446M (herein referred to as "**Motor Car**"), which was involved in a road traffic accident on 15th April 2019.
2. The objective of the inspection is to 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 16th July 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

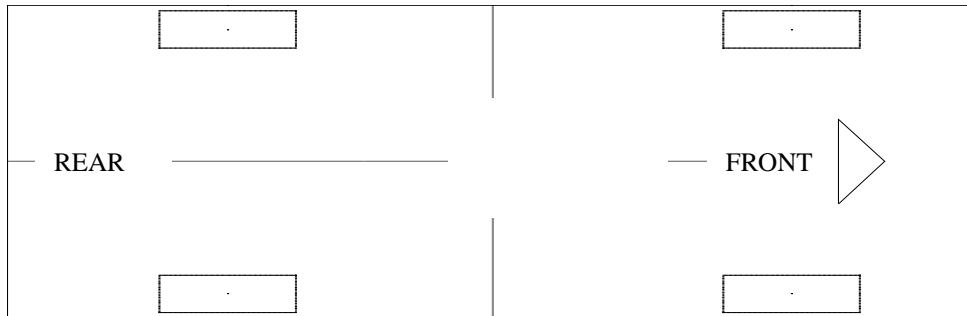
4. The mileage of the Motor car at the time of my inspection was not recorded due to the damage to the battery, engine and ignition system as a result of the accident.
5. The Motor car was observed to have sustained moderate damage at its front portion. Its front windscreen, front bonnet, front bumper, front number plate, front reinforcement engine system, ignition system, front radiator and rear bumper was amongst the body parts that were damaged as a result of the accident.

Tyres and Wheel Rims

6. 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 4 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:-

Bridgestone 195/50R15 (4.6mm)

Bridgestone 195/50R15 (3.7mm)



Bridgestone 195/50R15 (4.5mm)

Bridgestone 195/50R15 (3.7mm)

7. The 4 tyres were observed to be wrapped around alloy wheel rims that were found to be without any damage. See photo 1 – 14 below.



Photo 1 shows a general view of the Motor Car's front body at the time of my inspection. The Motor car was observed to have sustained moderate damage at its front portion. Its front windscreen, front bonnet, front bumper, front number plate, front reinforcement front radiator, engine system, ignition system and rear bumper was amongst the body parts that were damaged as a result of the accident.



Photo 2 shows the close up view of the Motor Car's front body at the time of my inspection. The Motor car was observed to have sustained damage; its front windscreen (arrowed) as a result of the accident.



Photo 3 shows the close up view of the Motor Car's front body at the time of my inspection. The Motor car was observed to have sustained damage; its front bonnet (arrowed) was amongst the body parts that were damaged as a result of the accident.



Photo 4 shows the general view of the Motor Car's front body at the time of my inspection. The Motor car was observed to have sustained damage, its front bumper; front number plate (arrowed) was amongst the body parts that were damaged as a result of the accident.



Photo 5 shows the close up view of the Motor Car's front body at the time of my inspection. The Motor car was observed to have sustained damage, its front radiator and front reinforcement (arrowed) was amongst the body parts that were 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 engine system (arrowed) 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 front portion of the Motor Car at the time of my inspection. The ignition system (arrowed) of the Motor Car was observed to have been damaged as a result of the induced impact as a result of the accident



Photo 8 shows a general view of the Motor Car's right body panel at the time of my inspection. The rear bumper portion (arrowed) of the Motor Car was observed to have been damaged by the accident.



Photo 9 shows a general rear view of the Motor Car's left body panel at the time of my inspection. The rear bumper portion (arrowed) of the Motor Car was observed to have been damaged by the accident.



Photo 10 shows a general view of the Motor Car's rear body at the time of my inspection. The rear bumper portion of the Motor Car was observed to have been damaged by the accident.



Photo 11 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 3.7mm. The tyre was sufficiently inflated for vehicular operation with no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread. The 4 tyres of the Motor Car were wrapped around standard alloy wheel rims without any damage.



Photo 12 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 4.5mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).



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. The tyre, which was wrapped around alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation. The 4 tyres of the Motor Car were wrapped around standard alloy wheel rims.



Photo 14 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 3.7mm. There was also no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the Motor Car's 4 tyres.

Engine Compartment & Operating Fluids

8. Upon examination of the engine compartment of the Motor Car, I had observed all the parts and components inside the engine compartment. Upon examination of the engine compartment of the Motor Car, I had observed all the parts and components inside the engine compartment. The brake fluid, and power steering fluid were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids. However the engine oil and coolant was not inspection due to the damaged to these parts as a result of the accident.
9. Further examination of the engine compartment revealed no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment of the Motor Car.
10. My subsequent checks on the underside of the Motor Car also revealed no sign(s) or indication(s) of fluid leak and/or fluid stain(s). Visually, the various undercarriage components of the Motor Car were all observed to be intact. See photo 15 – 17 below.



Photo 15 shows a general view of the Motor Car's engine compartment and the various parts and components inside the engine compartment. There was also no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment.



Photo 16 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 (arrowed) and without any visible contamination.



Photo 17 shows the power steering dip stick of the Motor Car at the time of my inspection. The power steering fluid was observed to be of sufficient level and with visible contamination.

Braking System & Steering 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 its steering wheel, ignition system and engine system.
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 intact.
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 18 - 25 below.



Photo 18 shows the interior cabin of the Motor Car. The steering wheel at time of my inspection of the Motor Car was observed to be damaged and missing as a result of the accident



Photo 19 shows the close up view of the steering wheel of the Motor Car at time of my inspection of the Motor Car was observed to be damaged and missing (arrowed) as a result of the accident



Photo 20 shows the brake hose/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. Static tests of the Motor Car's braking system had indicated that there was no internal leakage of pressure/vacuum. The undercarriage components of the Motor Car were also all found to be intact and without any visible damage.



Photo 21 shows the brake hose/pipe (arrowed) at the rear right wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the drum brake, brake booster, brake pedal etc had revealed all to be intact and without visible damage.



Photo 22 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage.



Photo 23 shows the brake hose/pipe (arrowed) at the front 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. Static tests of the Motor Car's braking system had indicated that there was no internal leakage of pressure/vacuum. The undercarriage components of the Motor Car were also all found to be intact and without any visible damage.



Photo 24 shows the various undercarriage components at the front right wheel of the Motor Car, which had included the steering tie rod (red arrow). The various undercarriage components of the Motor Car were all found to be intact without any visible damage.



Photo 25 shows the various undercarriage components at the front left wheel of the Motor Car, in particular the steering tie rod (red arrow) and drive shaft (yellow arrow). The various steering components were all found to be intact, suggesting that the steering system of the Motor Car was likely to be in serviceable condition at the material time of accident. There was also no sign of fluid stain observed on the various undercarriage components at the front right wheel of the Motor Car.

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 engine system as a result of the accident.

Operational Behaviour of the Motor Car

15. 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 due to damage to the battery and engine system).

Conclusion

16. 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.

17. The 4 tyres of the Motor Car were also found 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 4 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3.7mm to 4.6mm.

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