

Your Ref: TP/IP/43533/2021
Our Ref : CI/TPD21011272/P

10th November 2021

General Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR CAR SMR 1861B

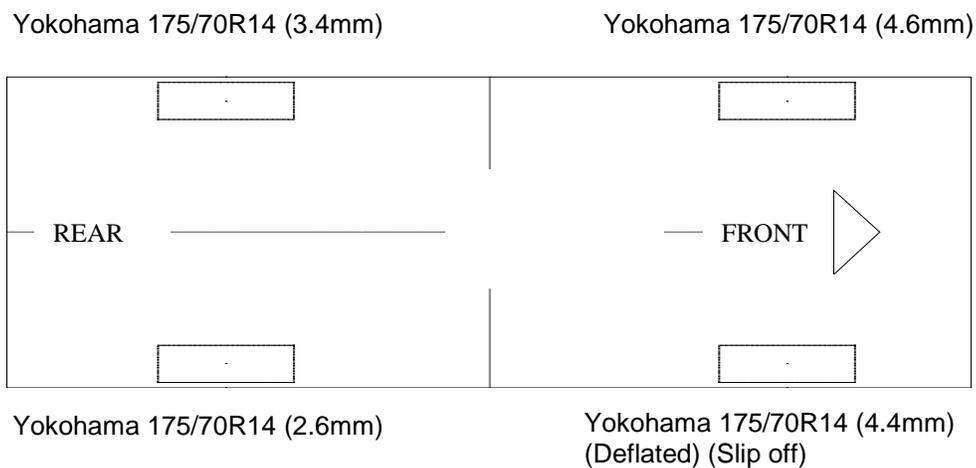
1. I refer to your request on 29th October 2021 to conduct a physical inspection of a Motor Car bearing registration number SMR 1861B (herein referred to as "**Motor Car**"), which was involved in a road traffic accident on 13th September 2021.
2. The objective of the inspection is to determine if there 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 5th November 2021 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 38,567km.
5. The Motor Car was observed to have sustained damage at its front portion. Its front bumper and front right fender were 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 front right tyre was observed to be in damaged as a result of the accident. However, the other 3 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 3 tyres. The 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:-



7. The front right tyre and rims was observed to be deflated and slipped off as a result of the accident. However the other 3 tyres were observed to be wrapped around standard alloy wheel rims that were found to be damage as a result of the accident. See photo 1 – 12 below.



Photo 1 shows the mileage of the Motor Car at the time of my inspection. The mileage observed was 38,567km.



Photo 2 shows the general view of the Motor Car's rear body at the time of my inspection. The rear portion of the Motor Car was observed to have been unaffected by the accident.



Photo 3 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 damage at its front portion. Its front bumper and front right fender were amongst the body parts that were damaged as a result of the accident.



Photo 4 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 at its front portion. Its front bumper (circled) were 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 at its front portion. Its front right fender (circled) were amongst the body parts that were damaged as a result of the accident.



Photo 6 shows a general view of the Motor Car's left body at the time of my inspection. The right portion of the Motor Car was observed to have been unaffected by the accident.



Photo 7 shows a general view of the Motor Car's left body at the time of my inspection. The left portion of the Motor Car was observed to have been unaffected by the accident.



Photo 8 shows the condition of the front right tyre of the Motor Car, which was observed to be unserviceable condition with remaining tread depth of approximately 4.4mm. The tyre was observed to be deflated and slipped off the wheel rim as a result of the accident.



Photo 9 shows the close up view of the condition of the front right tyre of the Motor Car, which was observed to be unserviceable condition. The tyre was observed to be deflated and slip off as there was damage observed on the wheel rims (circled) as a result of the accident.



Photo 10 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 2.6mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).



Photo 11 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 3.8mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).



Photo 12 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 4.6mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).

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 to be intact and unaffected by the accident. The brake fluid, engine oil and engine coolant were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.
9. The brake fluid, engine oil and engine coolant were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.
10. 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.
11. 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 and without any visible damage. See photo 13 – 17 below.



Photo 13 shows a general view of the Motor Car's engine compartment. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment.

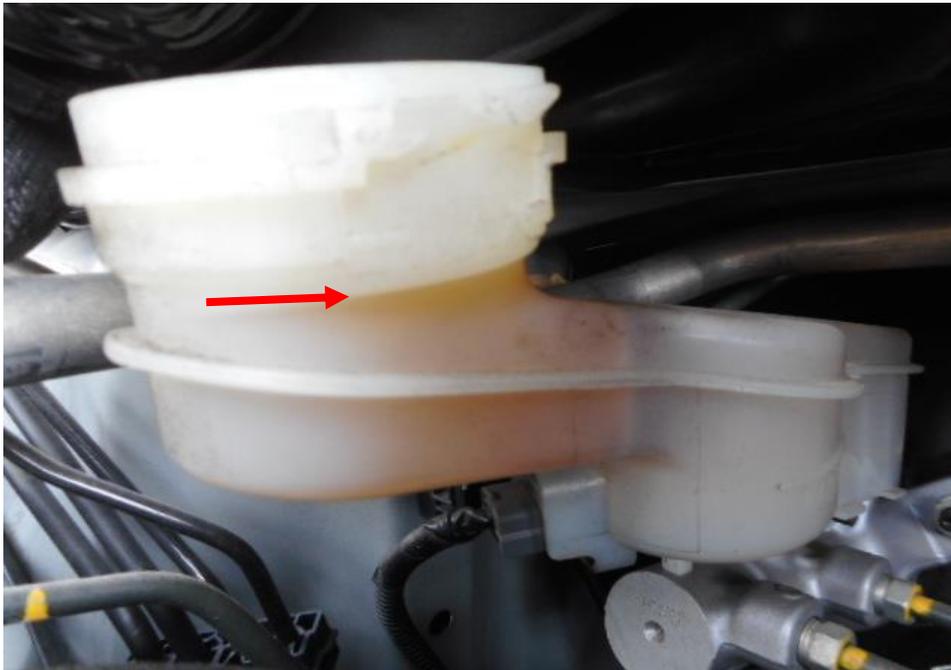


Photo 14 shows the brake fluid reservoir of the Motor Car at the time of my inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.



Photo 15 shows the engine oil dip stick of the Motor Car at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.



Photo 16 shows checks being carried out to the engine coolant of the Motor Car at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.



Photo 17 shows the undercarriage of the Motor Car, at the area where the engine housing and transmission housing are located. I did not find any sign(s) or indication(s) of fluid leak and/or fluid stain(s) on the underside of the Motor Car.

Braking System & Steering System

12. Static brake tests conducted on the Motor Car revealed no abnormality. The brake booster had responded well to the various tests conducted. There was also no abnormal movement of the brake pedal when it was depressed. In general, the static brake tests had suggested that there was no internal leakage of pressure/vacuum in the braking system of the Motor Car. The braking system of the Motor Car was likely to be in serviceable condition at the material time. This was 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.
13. Static test on the steering system of the Motor Car was conducted and revealed abnormality as we observed that the front right tie rod was broken as a result of the accident. However, my visual examination of the other various steering components which had included the steering rack and pinion, the left tie rod ends and ball joints revealed that these components were all generally in good condition. See photo 18 - 23 below.



Photo 18 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 19 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 20 shows the brake hose/pipe (arrowed) at the front right 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.

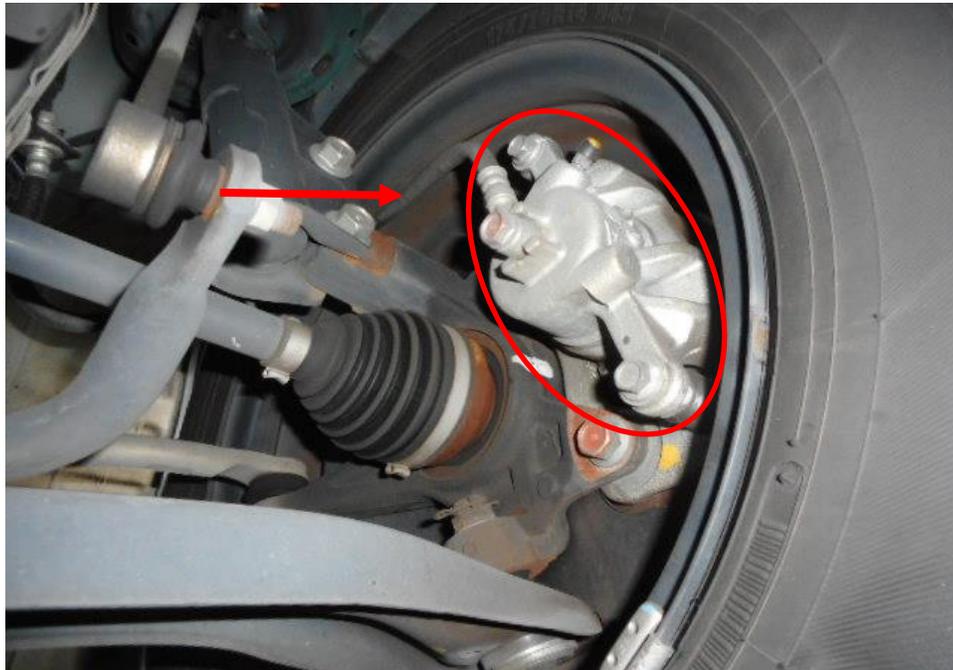


Photo 21 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without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

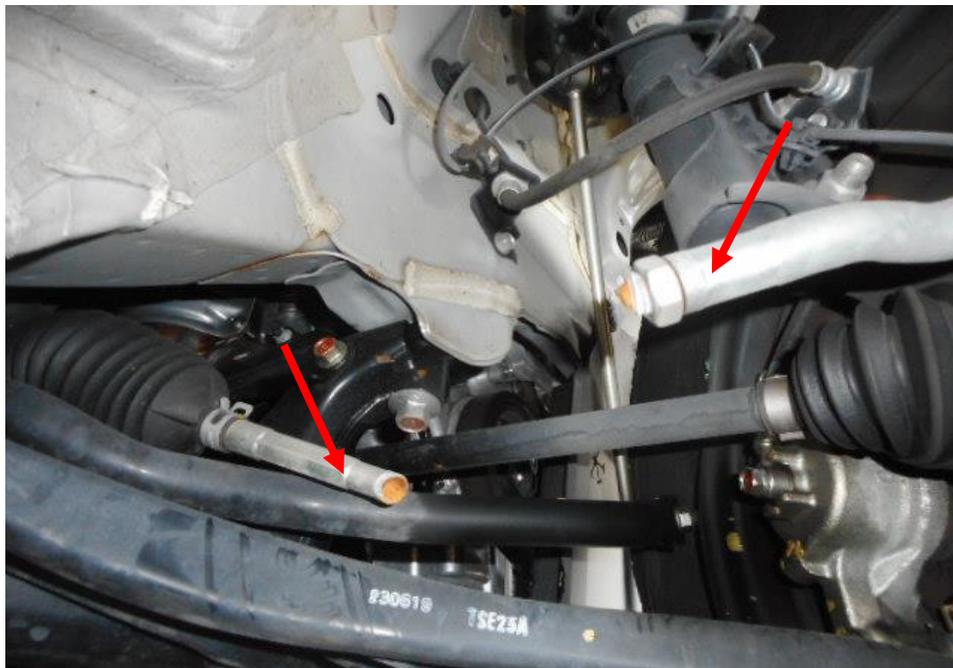


Photo 22 shows the various undercarriage components at the front right wheel of the Motor Car, in particular the steering tie rod (arrowed). The various steering components were all found to be broken as a result of the accident.

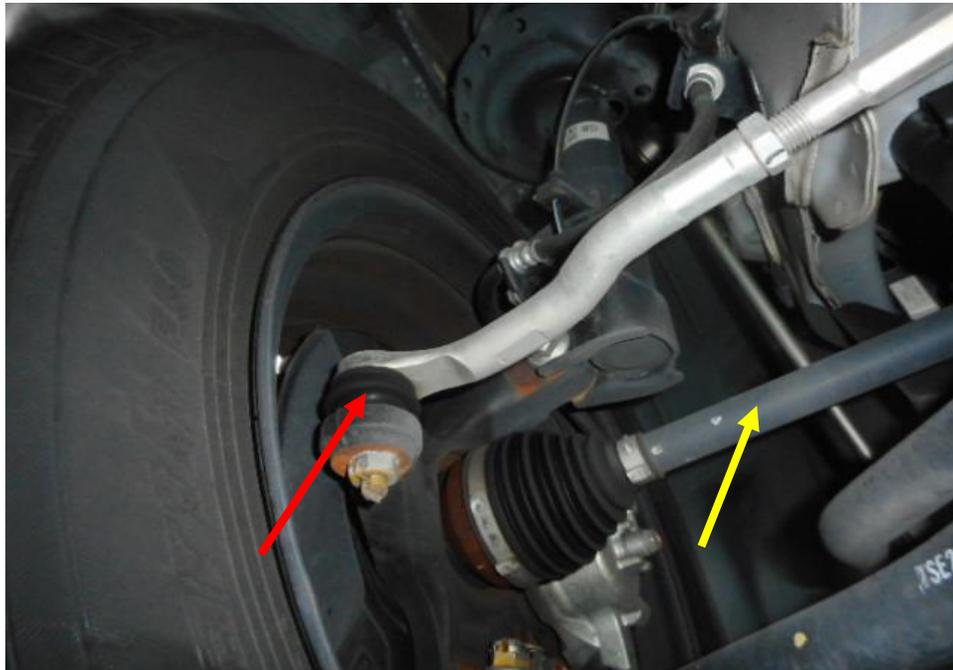


Photo 23 shows the various undercarriage components at the front left wheel of the Motor Car, in particular the steering tie rod (red arrow) and driveshaft (yellow arrow). The various steering components were all found to be intact, suggesting that the steering system of the Motor Car was likely to be 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 electronic operating systems like the Anti-Lock Brake System (ABS), Electrical Power Steering (EPS) and Traction Control System (TCS) during cranking of the engine had indicated that the system were in working condition and without abnormality. This can be established from the warning lights disappearing from the instrument panel after the self-test. However, the Supplemental Restraint System (SRS) remained illuminated up due to the activation of the front right seat belt tensioner as a result of the accident. See photo 24 & 25 below.



Photo 24 shows the warning light for Anti-Lock Brake System (ABS), Supplemental Restraint System (SRS) (arrowed) appearing on the instrument panel of the Motor Car during the self-test of its various electronic operating systems when its engine was cranked.



Photo 25 shows only the Supplemental Restraint System (SRS) warning lights (arrowed) remained illuminated on the instrument panel of the Motor Car after the engine was cranked due to the activation of the front right seat belt tensioner. However, the other electronic operation system did not, this would suggest that there was no abnormality to the electronic operating system of the Motor Car, like the ABS, EPS, TCS and etc.

Seat Belts

15. The front right seat belt of the “Motor Car” was worn at the material time of accident as the respective pre-tensioners that were fitted at the side of the seat was activated upon the material time. See photo 26 below.



Photo 26 shows that the seat belt on the right seat was worn at the material time of accident as the safety pre-tensioners was activated at the moment of impact and caused the seat belt to be locked into the last position.

Operational Behaviour of the Motor Car

16. An operational test by driving the Motor Car 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 to its front right tyre, rims and front right tie rod had prevented me from carrying out any operational test(s).

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).

18. However, static brake was able to be conducted and in general our visual inspection of the mechanical components of the Motor Car's braking system appear to suggest that its braking system was in serviceable condition at the material time of accident and there was no leakage found at the braking components of the Motor Car.

19. The front right tyre and wheel rim of the Motor Car were found to be damaged as a result of the accident. However, the other 3 tyres were found to be serviceable condition as 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 3 tyres. The 4 tyres were also observed with remaining tread depth of approximately 2.6mm to 4.6mm.

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

DISCLAIMER OF LIABILITY TO THIRD PARTIES: - This Report is made solely for the use and benefit of the Client named on the front page of this Report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the Report wholly or in part. Any third party acting or relying on this Report, in whole or in part does so at his or her own risk.