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You're Ref: TP/IP/08470/2022 1st June 2022
Our Ref: CI/TPD22005074/P

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

MECHANICAL INSPECTION REPORT OF MOTOR TAXI SH 9985G

1. I refer to your request on 30th May 2022 to conduct a physical inspection of a Motor Taxi bearing registration number SH 9985G (herein referred to as "**Motor Taxi**"), which was involved in a road traffic accident on 13th April 2022.

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 31st May 2022 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.

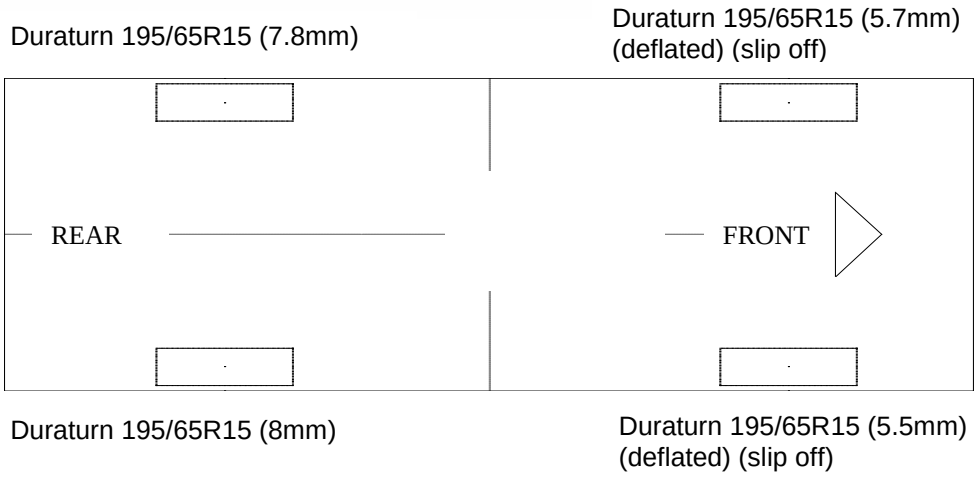
General Condition

4. The mileage of the Motor Taxi at the time of my inspection was 238,928km.

5. The Motor Taxi was observed to have sustained damage at its front portion. Its front windscreen, front bonnet, front bumper and front right fender was the body parts and various engine components were also damaged as a result of the accident.

Tyres and Wheel Rims

6. The front left and right tyres was observed to be deflated and slip off the wheel rims as a result of the impact sustained from the accident. However, the condition of the Motor Taxi's rear left and right 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 rear left and right 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 left and right tyres was observed to be deflated and slip off the wheel rims as a result of the accident. However, the rear left and right tyres were observed to be wrapped around standard alloy wheel rims that were found to be without any damage. See photo 1 – 12 below.

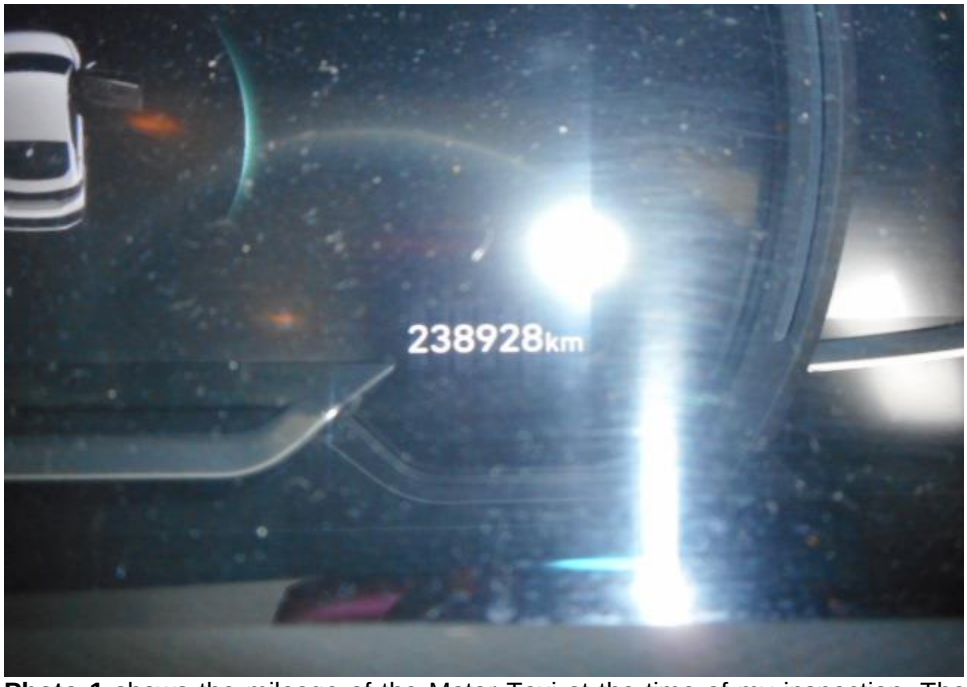


Photo 1 shows the mileage of the Motor Taxi at the time of my inspection. The mileage observed was 238,928km.

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

Photo 3 shows a general view of the Motor Taxi's front body at the time of my inspection. The front portion of the Motor Taxi was observed to have sustained damage. Its front windscreen, front bonnet, front bumper and front right fender was the body parts and various engine components were also damaged as a result of the accident.

Photo 4 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front windscreen (circled) as a result of the accident.

Photo 5 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front bumper (red circle) and front right fender (yellow circle) as a result of the accident.

Photo 6 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front bumper (circled) and front left fender (arrowed) as a result of the accident.

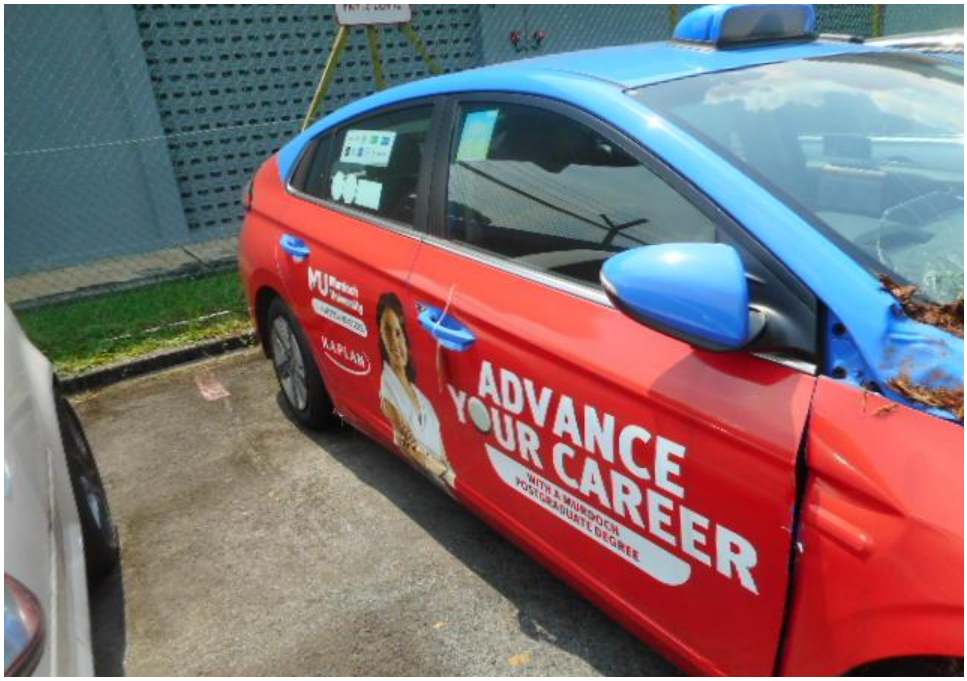


Photo 7 shows a general view of the Motor Taxi's right body at the time of my inspection. The right portion of the Motor Taxi was observed to have been unaffected by the accident.

Photo 8 shows a general view of the Motor Taxi's left body at the time of my inspection. The left portion of the Motor Taxi was observed to have been unaffected by the accident.

Photo 9 shows the condition of the front right tyre of the Motor Taxi, which was observed to be in unserviceable condition with remaining tread depth of approximately 5.5mm. The tyre was deflated and slip off the wheel rim as a result of the accident. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread.

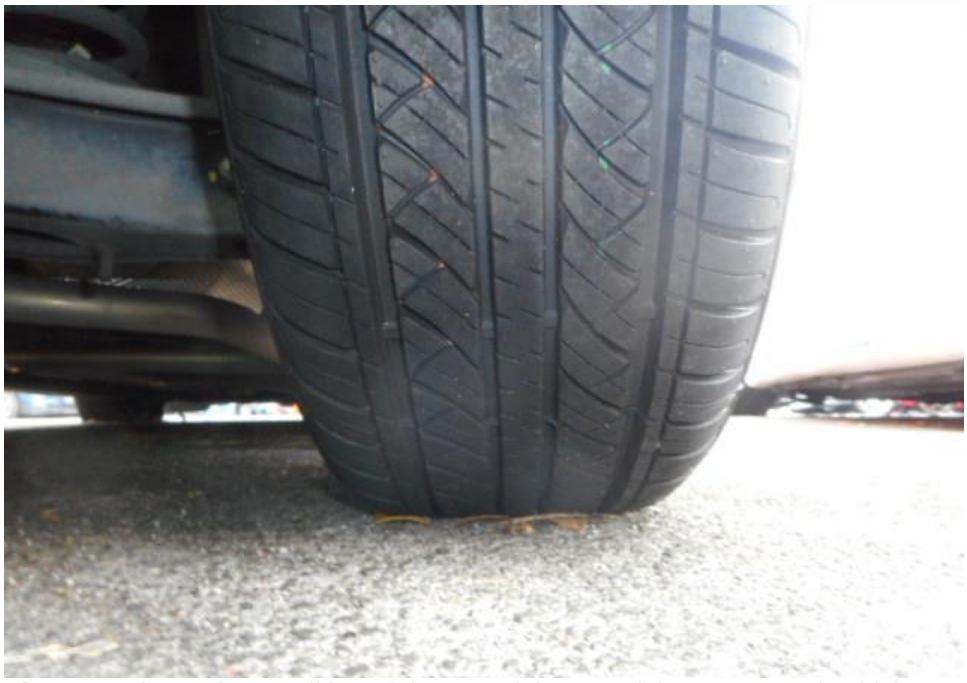


Photo 10 shows the condition of the rear right tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 8mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).

Photo 11 shows the condition of the rear left tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 7.8mm. The tyre, which was wrapped around steel wheel rim, was also observed to be sufficiently inflated for vehicular operation. The 4 tyres of the Motor Taxi were wrapped around standard steel wheel rims.

Photo 12 shows the condition of the front left tyre of the Motor Taxi, which was observed to be in unserviceable condition with remaining tread depth of approximately 5.7mm. The tyre was deflated and slip off the wheel rim as a result of the accident. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread.

Engine Compartment & Operating Fluids

8. Upon examination of the engine compartment of the Motor Taxi, I had observed that the right side engine mounting and the engine coolant hose had been damaged as a result of the accident. The brake fluid, engine oil and were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids. However, the engine coolant was observed to be insufficient as the engine coolant hose was damaged by 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 Taxi.

10. My subsequent checks on the underside of the Motor Taxi also revealed no sign(s) or indication(s) of fluid leak and/or fluid stain(s). Visually, the various undercarriage components of the Motor Taxi were all observed to be intact and without any visible damage. See photo 13 – 19 below.

Photo 13 shows a general view of the Motor Taxi's engine compartment, I had observed that the right side engine mounting and the engine coolant hose had been damaged as a result of the accident.

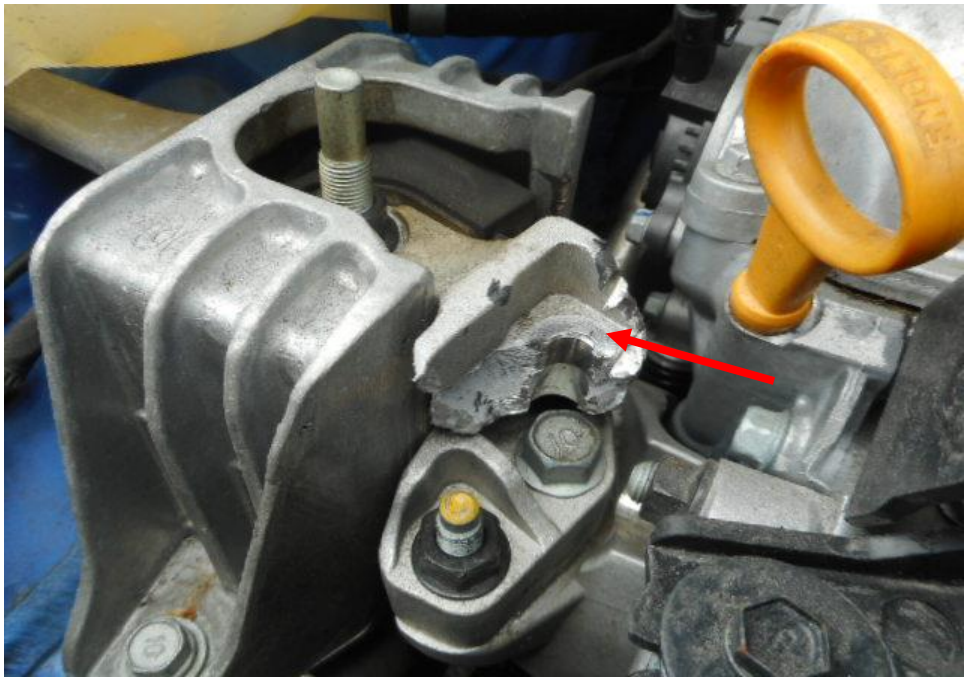


Photo 14 shows the close up view of the right side engine mounting of the Motor Taxi at the time of my inspection. The right side engine mounting (arrowed) of the Motor Taxi was damaged as a result of the accident.

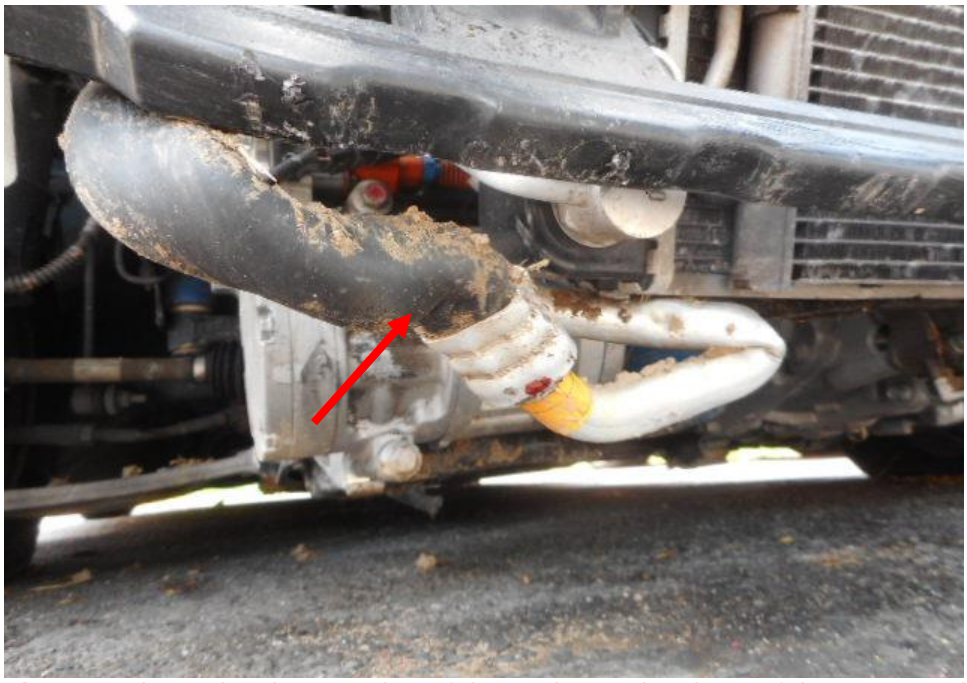


Photo 15 shows the close up view of the engine coolant hose of the Motor Taxi at the time of my inspection. The engine coolant hose (arrowed) of the Motor Taxi was damaged as a result of the accident.

Photo 16 shows checks being carried out to the engine coolant of the Motor Taxi at the time of my inspection. The engine coolant was observed to be of insufficient level (arrowed) as the damage to the engine coolant hose has caused a leakage.

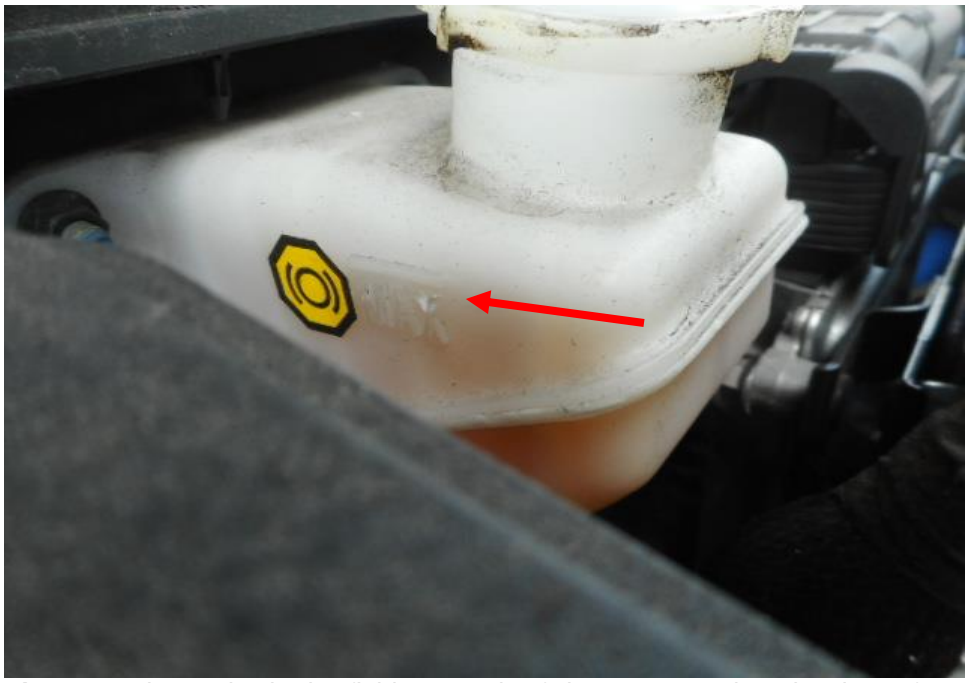


Photo 17 shows the brake fluid reservoir of the Motor Taxi at the time of my inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 18 shows the engine oil dip stick of the Motor Taxi at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.

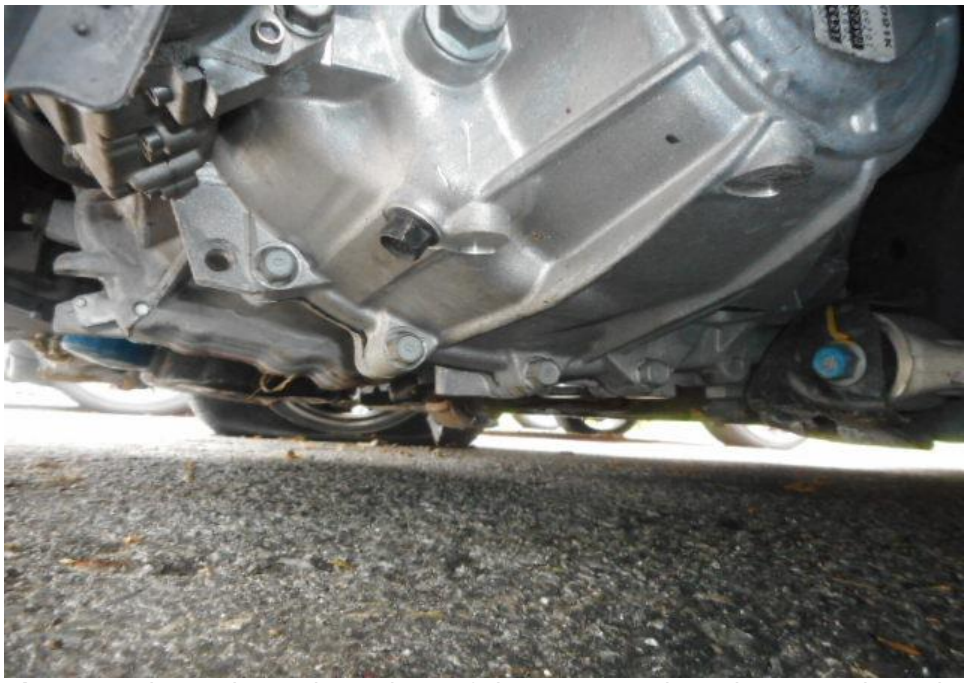


Photo 19 shows the undercarriage of the Motor Taxi, at the area where the engine housing and transmission housing are located. I did not find any sign(s) or indication(s) of fluid leak and/or fluid stain(s) on the underside of the Motor Taxi.

Braking System & Steering System

11. Static brake tests conducted on the Motor Taxi 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 Taxi. The braking system of the Motor Taxi 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.

12. Static test on the steering system of the Motor Taxi also revealed abnormality to the steering system. I experienced resistance when turning the steering wheel left and right to full lock positions as my visual examination of the various steering components had revealed that the front right tie rod had sustained damaged as a result of the accident. However, the other components such as the steering rack and pinion, tie rod of the left side, tie rod ends and ball joints revealed that these components were all generally in good condition. See photo 20 - 25 below.

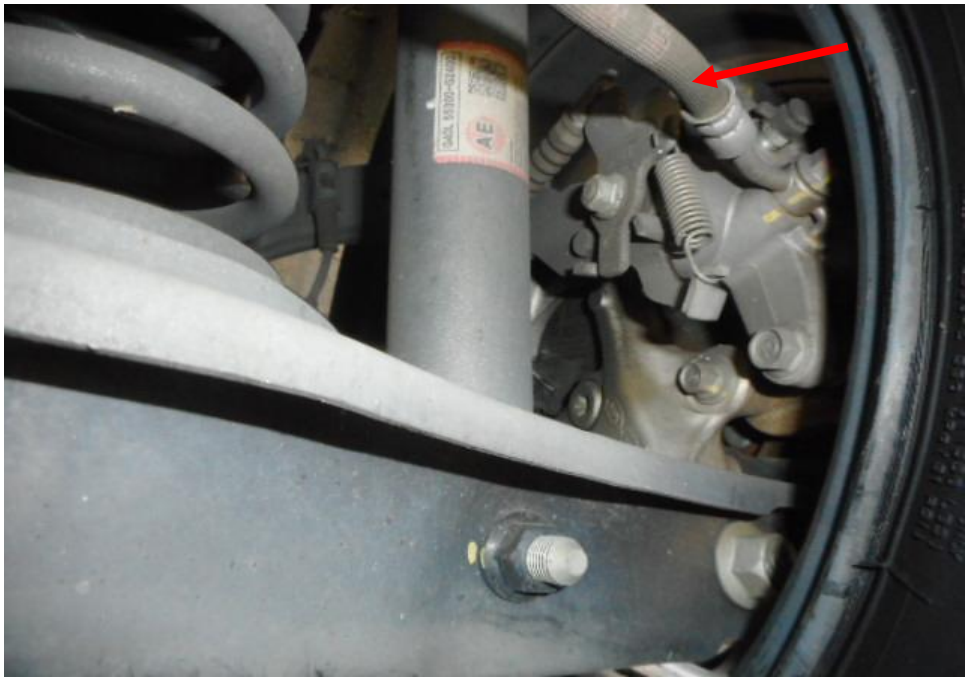


Photo 20 shows the brake hose/pipe (arrowed) at the rear right wheel of the Motor Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the drum brake, brake booster, brake pedal etc. had revealed all to be intact and without visible damage.

Photo 21 shows the brake hose/pipe (arrowed) at the rear left wheel of the Motor Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Taxi. Static tests of the Motor Taxi's braking system had indicated that there was no internal leakage of pressure/vacuum. The undercarriage components of the Motor Taxi were also all found to be intact and without any visible damage.

Photo 22 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Taxi. Static tests of the Motor Taxi's braking system had indicated that there was no internal leakage of pressure/vacuum. The undercarriage components of the Motor Taxi were also all found to be intact and without any visible damage.

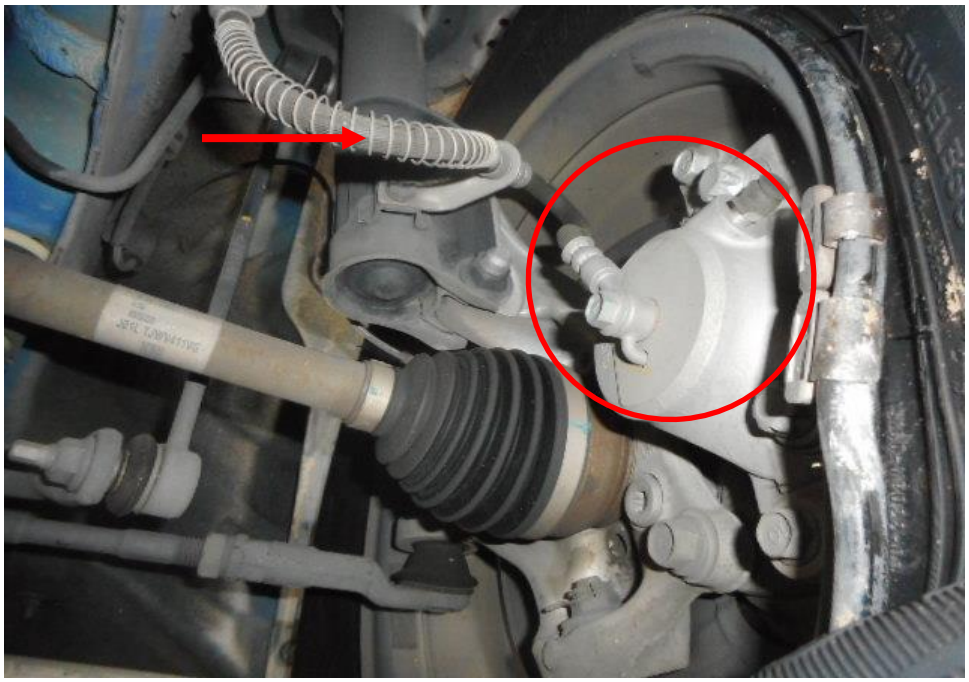


Photo 23 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage.

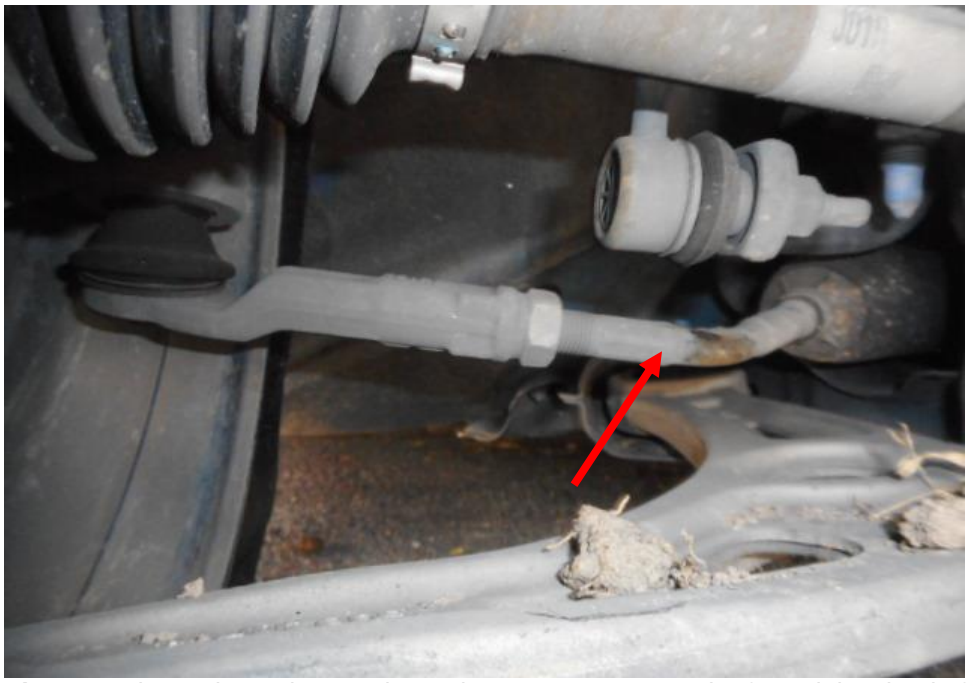


Photo 24 shows the various undercarriage components at the front right wheel of the Motor Taxi, in particular the steering tie rod (arrowed) was observed to be damaged as a result of the accident.

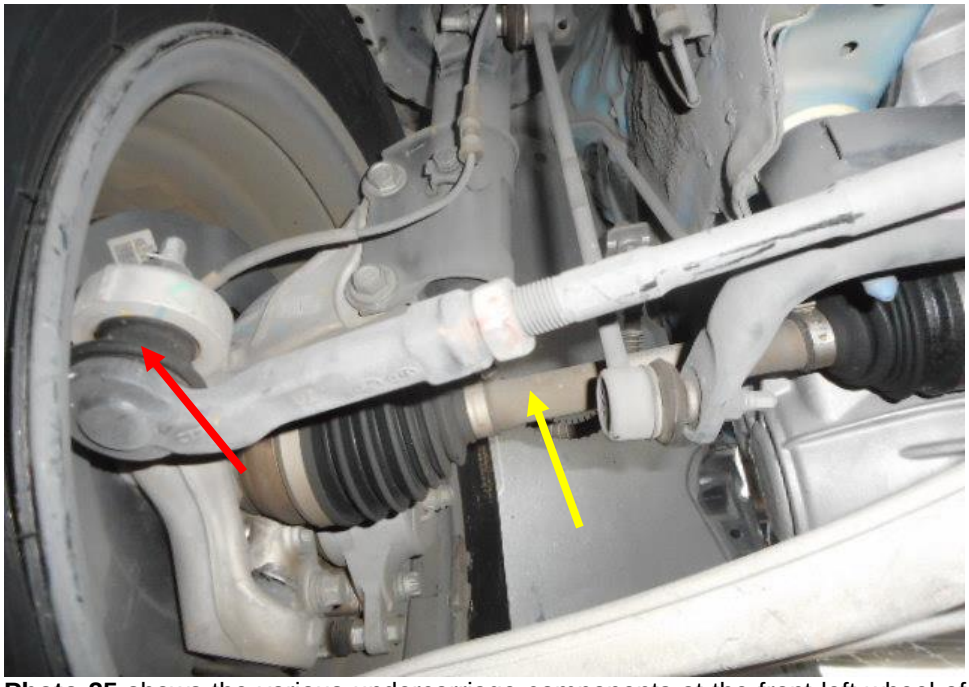


Photo 25 shows the various undercarriage components at the front left wheel of the Motor Taxi, which had included the steering tie rod (arrowed) and drive shaft (yellow arrow). The various undercarriage components of the Motor Taxi were all found to be intact without any visible damage.

Electronic Safety / Warning Indicators

13. The Motor Taxi 's automatic self-test of the functionality of its electronic operating systems like the Anti-Lock Brake System (ABS) and Electric Power Steering System (EPS), Supplemental Restraint System (SRS) and Traction Control (TC) 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, only the engine and Tyre Pressure Monitoring System (TPMS) light remained illuminated as a result of the insufficient coolant in the engine as a result of the damaged coolant hose and the deflated front left and right tyres caused by the accident. See photo 26 & 27 below.

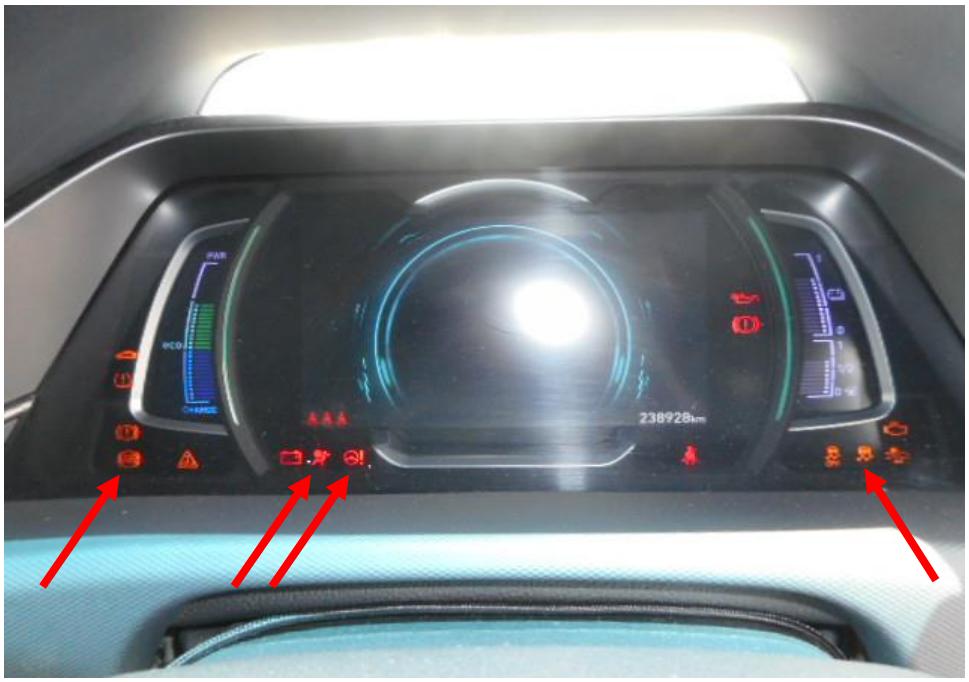


Photo 26 shows the warning light for Anti-Lock Brake System (ABS) and Power Steering System (EPS), Supplemental Restraint System (SRS) and Traction Control (TC) (arrowed) appearing on the instrument panel of the Motor Taxi during the self-test of its various electronic operating systems when its engine was cranked.

Photo 27 shows no warning lights illuminated on the instrument panel of the Motor Taxi after the engine was cranked. This would suggest that there was no abnormality to the electronic operating system of the Motor Taxi, like the ABS, EPS, SRS, and TC etc. However, only the engine and Tyre Pressure Monitoring System (TPMS) (arrowed) light remained illuminated as a result of the insufficient coolant in the engine as a result of the damaged coolant hose and the deflated front left and right tyres caused by the accident.

Seat Belts

14. The Front right, front left, rear right and rear left seat belts of the "Motor Taxi" were tested and all the seat belts were able to be fastened securely into the respective pre-tensioners that were fitted at the sides of each seat.

Operational Behaviour of the Motor Taxi

15. A short operational test of the Motor Taxi, to primarily determine whether there was any abnormality to its various operating systems like its engine system, its transmission system, steering system and braking system could not be conducted given the extent of damage that it had sustained to its right engine mounting and its front left and right tyres had prevented me from carrying out any operational test(s).

Conclusion

16. From 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).

17. However, static brake was able to be conducted and in general our visual inspection of the mechanical components of the Motor Taxi'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 Taxi.

18. The 4 tyres of the Motor Taxi 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 5.5mm to 8mm.

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