LKK Auto Consultants Pte Ltd
Company Registration No. 199607198R
51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108

Your Ref: TP/IP/13635/2020
Our Ref : CI/TPD20004880/P

18th June 2020

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

MECHANICAL INSPECTION REPORT OF MOTOR CAR SKB 3503E

1. I refer to your request on 14th April 2020 to conduct a physical inspection of a Motor Car bearing registration number SKB 3503E (herein referred to as "**Motor Car**"), which was involved in a fatal road traffic accident.

2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Car that may have contributed to the accident on 4th March 2020.

3. Following the request, I had carried out a physical inspection of the Motor Car on 12th June 2020 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.

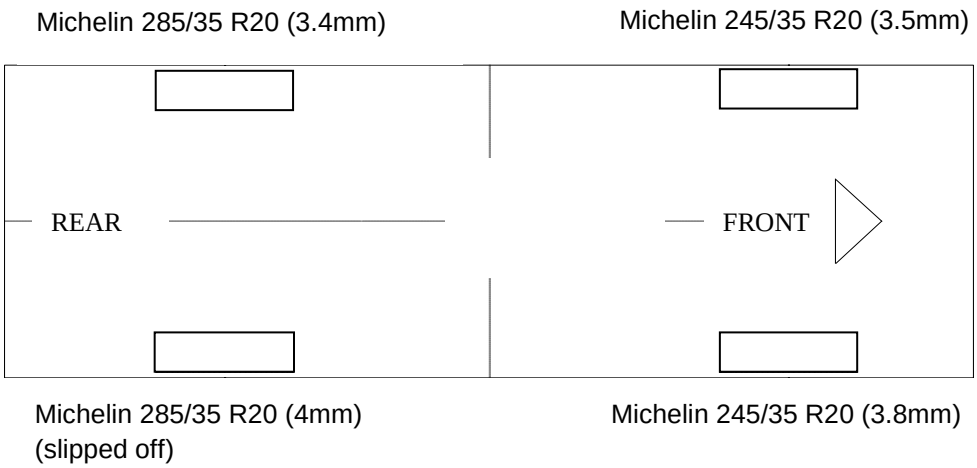
General Condition

4. The mileage of the Motor Car at the time of my inspection was 39,378 mi = 63,372km.

5. The Motor Car appeared to have sustained damage at its rear right portion. Its rear bumper, rear right fender and rear right rims were damage at the time of my inspection. The Supplemental Restraint System (SRS) was activated as a result of the accident.

Tyres and Wheel Rims

6. The rear right tyre of the Motor Car were observed to be slipped off the rims due to the damaged the Motor car's rim that it had sustained from the accident, however the other 3 tyres are observed to be in serviceable condition and sufficiently inflated for vehicular operation. 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 tyre brand, tyre size and remaining tread depth of the 4 tyres of the Motor Car were recorded as follows:-



7. The rear right tyres were observed to slip off as the rim was damage 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 without any damage. See photo 1 – 11 below.

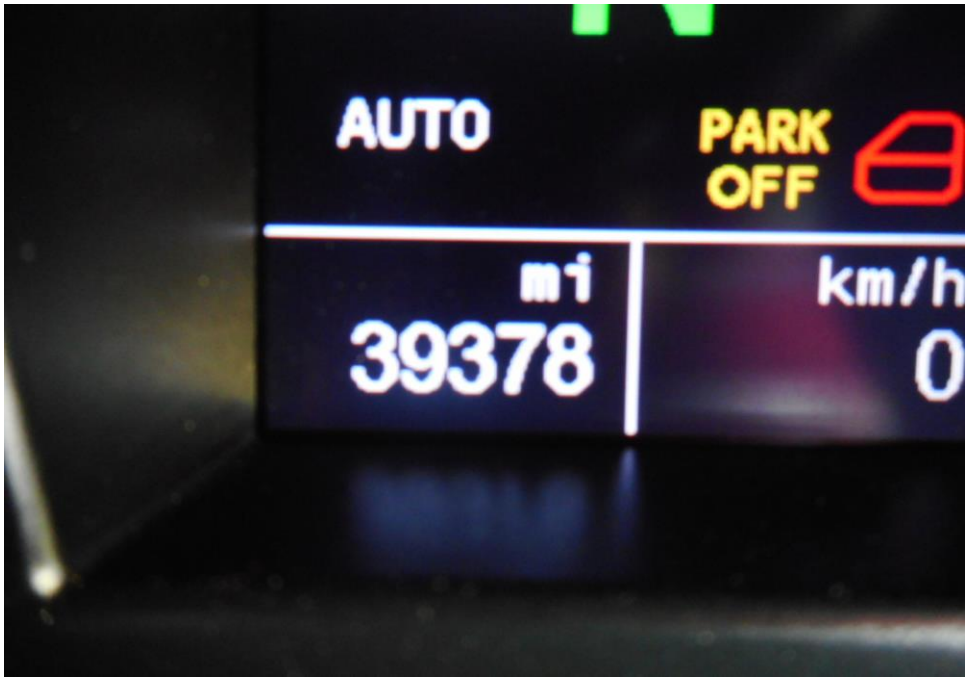


Photo 1 shows a general view of the instrument cluster of the Motor Car at the time of my inspection. The mileage of the Motor Car was 39,378mi = 63,372km

Photo 2 shows a general view of the Motor Car's right portion at the time of my inspection. It appeared to have sustained moderate damage at its right portion. Its rear bumper, rear right fender, rear right rim were damage at the time of my inspection.

Photo 3 shows a close up view of the Motor Car's rear right portion at the time of my inspection. Its rear bumper and rear right fender (red circle), rear right rim (yellow circle) were damage at the time of my inspection.

Photo 4 shows a general view of the Motor Car's frontal portion at the time of my inspection. The Motor Car was observed to be intact and unaffected by the accident.

Photo 5 shows a general view of the left body of the Motor Car at the time of my inspection. The Motor Car was observed to be intact and unaffected by the accident.

Photo 6 shows a general view of the rear body of the Motor Car at the time of my inspection. The Motor Car was observed to be intact and unaffected by the accident.

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 3.8mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 4 tyres that were fitted on the Motor Car.

Photo 8 shows the condition of the rear right tyre of the Motor Car, which was observed to be in unserviceable condition. The tyre, which was wrapped around standard alloy wheel rim was slipped out due to the damaged to the 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 of the tyre with remaining tread depth of approximately 4mm.

Photo 9 shows the condition of the rear left tyres of the Motor Car, which were observed to be in serviceable condition with remaining, tread depth of approximately 3.4mm. There was also no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 4 tyres that were fitted on the Motor Car.

Photo 10 shows the condition of the front left tyres of the Motor Car, which were observed to be in serviceable condition with remaining, tread depth of approximately 3.5mm. 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 4 tyres that were fitted on the Motor Car.

Photo 11 shows the deployment of the Supplemental Restraint System (SRS) airbag (arrowed) in the Motor Car as a result of the accident.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Car's engine compartment, 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, power steering fluid 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. Further examination of the engine compartment revealed, there was no sign(s) or indication(s) of fresh 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 fluid stain. Visually, the various undercarriage components of the Motor Car were all observed to be intact and without any visible damage. See photo 12 – 17 below.

Photo 12 shows a general view of the Motor Car's engine compartment, which was accessed by lifting the front cabin of the Motor Car. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment

Photo 13 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.

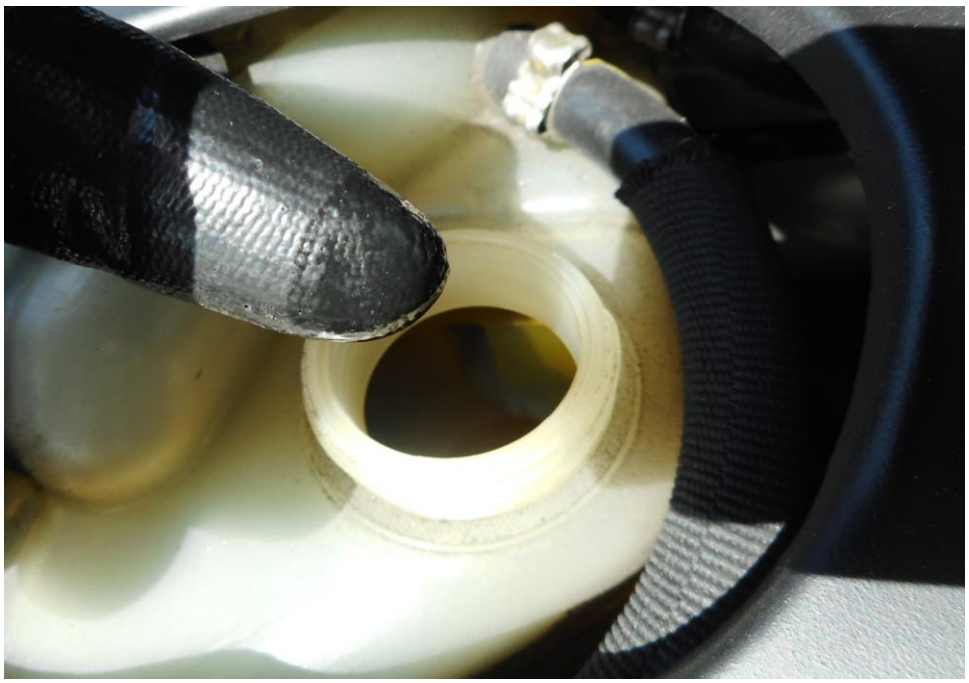


Photo 14 shows the engine coolant reservoir of the Motor Car at the time of my inspection. The engine coolant was observed to be of sufficient level and without any visible contamination.

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.

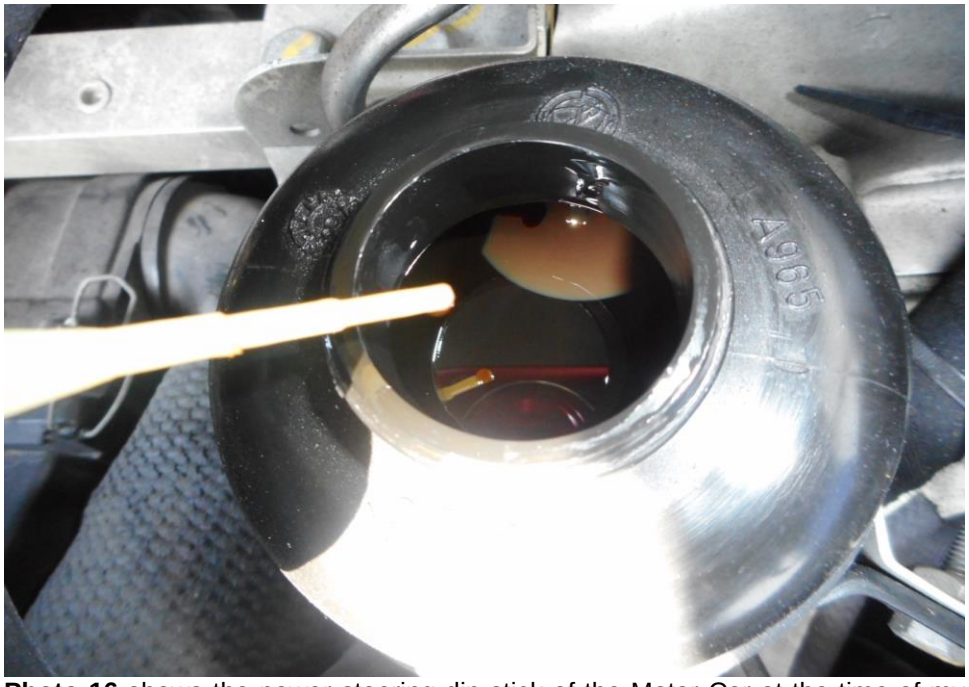


Photo 16 shows the power steering dip stick of the Motor Car at the time of my inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination.

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.

Steering System & Braking System

11. 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 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.

12. Static test on the steering system of the Motor Car also revealed no abnormality to the steering system. I did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions. My visual examination of the various steering components which had included the rack and pinion, tie rods, tie rod ends and ball joints had revealed that these components were all generally in good condition. See photo 18 - 24 below.

Photo 18 shows the various undercarriage components at the front right wheel of the Motor Car, in particular the steering tie rod end (arrowed) 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(s) observed on the various undercarriage components.

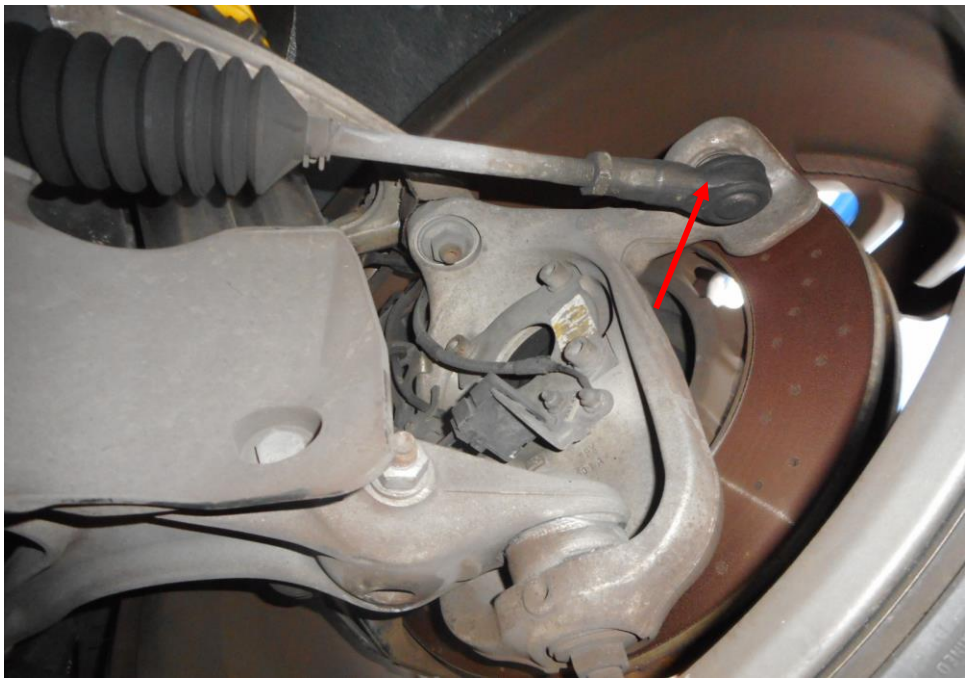


Photo 19 shows the various undercarriage components at the front left wheel of the Motor Car, in particular the steering tie rod end (arrowed). The various Undercarriage components of the Motor Car were all found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 20 shows the brake pipe (arrowed) at the rear 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. My static tests of the Motor Car's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Motor Car was likely to be in serviceable condition at the material time of accident.

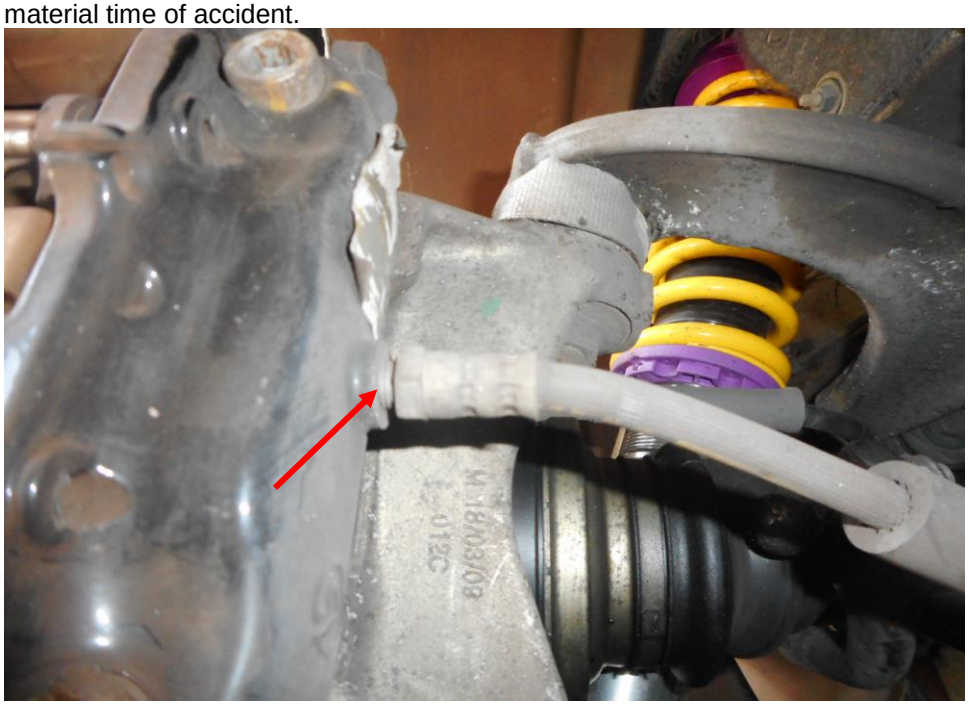


Photo 21 shows the brake pipe (arrowed) at the rear left wheel of the Motor Car. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Car. My static tests of the Motor Car's braking system, along with my visual examination of the various mechanical components in the braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Motor Car was likely to be in serviceable condition at the material time of accident.

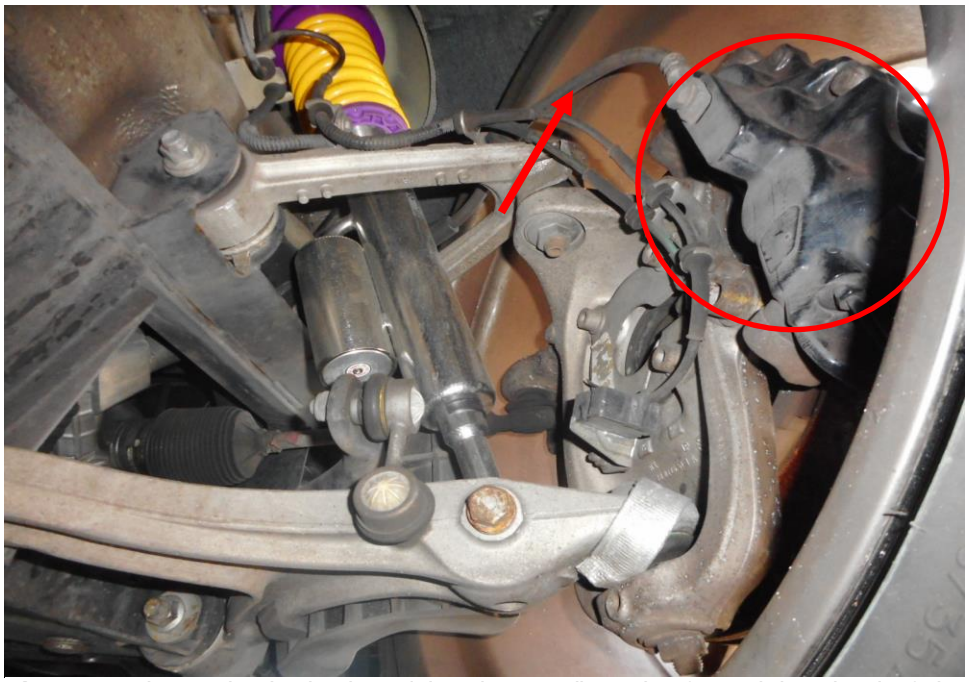


Photo 22 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without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

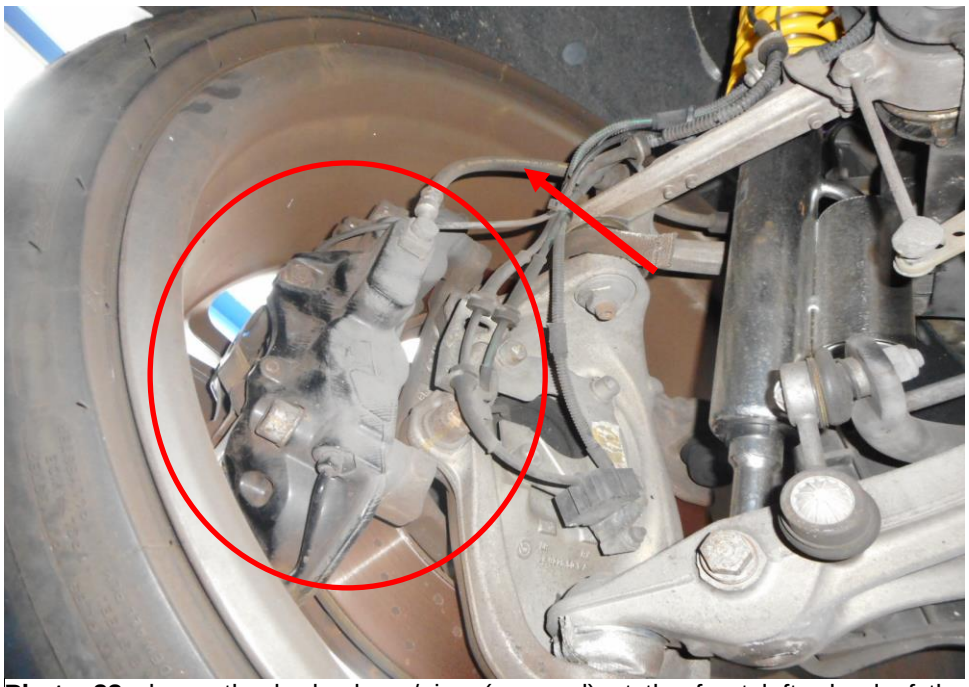


Photo 23 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 24 shows the various undercarriage components at the rear left wheel of the Motor Car, The drive shaft (yellow arrow) was found to be intact and there was no sign of fluid stain(s) observed on the various undercarriage components.

Electronic Safety / Warning Indicators

13. Motor Car's automatic self-test of the functionality of its various electronic operating systems like the Anti-Lock Brake System (ABS), Supplemental Restraint System (SRS), Traction Control System (TC) during cranking of the engine had indicated that these systems were in working condition and without abnormality. This can be established from the warning lights disappearing from the instrument panel after the self-test. See photo 25 & 26 below.

Photo 25 shows the warning light for Anti-Lock Brake System (ABS) and Supplemental Restraint System (SRS) and Traction Control System (TC) 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 26 shows no warning lights illuminated on the instrument panel of the Motor Car after the engine was cranked. This would suggest that there was no abnormality to the various electronic operating systems of the Motor Car, like the ABS, SRS and TC.

Seat Belts

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

Operational Behaviour of the Motor Car

15. A short operational test of the Motor Car, 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 was unable to be carried out. Due to the damaged to the rear right rim immobilizing the movement of the Motor Car.

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 and suspension system.

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

18. The rear right tyre of the Motor Car were observed to be in unserviceable condition as the tyre had slipped off the rim due to the damaged the rim had sustained. However, the other 3 tyres fitted on the Motor Car were 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 3 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3.4mm – 3.8mm and the rear right tyre with remaining tread depth of approximately 4mm.

Sherwin Beh
Technical Investigator

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