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/59537/2018 18th February 2019
Our Ref : CI/TPD18019567/Z

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

MECHANICAL INSPECTION REPORT OF MOTOR VAN GBH 2532C

1. We refer to your request on 26th October 2018 to conduct a physical inspection of a Motor Van bearing registration number GBH 2532C (herein referred to as "**Motor Van**"), which was involved in a fatal road traffic accident on 20th October 2018.

2. The purpose of this inspection is to primarily determine if there was any possible mechanical failure to the Motor Van that may have contributed to the accident.

3. Following the request, we carried out a physical inspection of the Motor Van on 23rd November 2018 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. We now set out below our observations and comments with respect to this inspection.

General Condition

4. The mileage of the Motor Van at the time of our inspection was not recorded as its ignition system was severely damaged by the collision.

5. The Motor Van had sustained extensive impact damage at its frontal portion. The impact force was significant, causing the various parts and components inside the engine compartment to be damaged. This had included its engine assembly and transmission assembly, which were both amongst the multiple parts and components inside the engine compartment that were pushed inwards, towards the rear of the Motor Van.

6. Other body parts that were damaged had included the front windscreen, front bonnet, front bumper, left & right passenger door, roof and right front door (detached) amongst others. The interior compartment was also affected badly; the driver's airbag was also activated due to the extensive impact at time of the accident.

7. This was likely due to the consistency of the accident's case facts that the Motor Van was travelling on the left most lane along Bukit Timah Road where he had lost control of his vehicle for unknown reason, mounted up left kerb before collided onto a tree. See photo 1 to 14 below.

Photo 1 shows a general view of the frontal portion of the Motor Van at the time of our inspection. The Motor Van was observed to have sustained extensive impact damage at its frontal portion. The impact force was significant, causing the various parts and components inside the engine compartment to be damaged.

Photo 2 shows a general view of the front right portion of the Motor Van at the time of our inspection. The Motor Van was observed to have sustained extensive impact damage at its frontal portion.

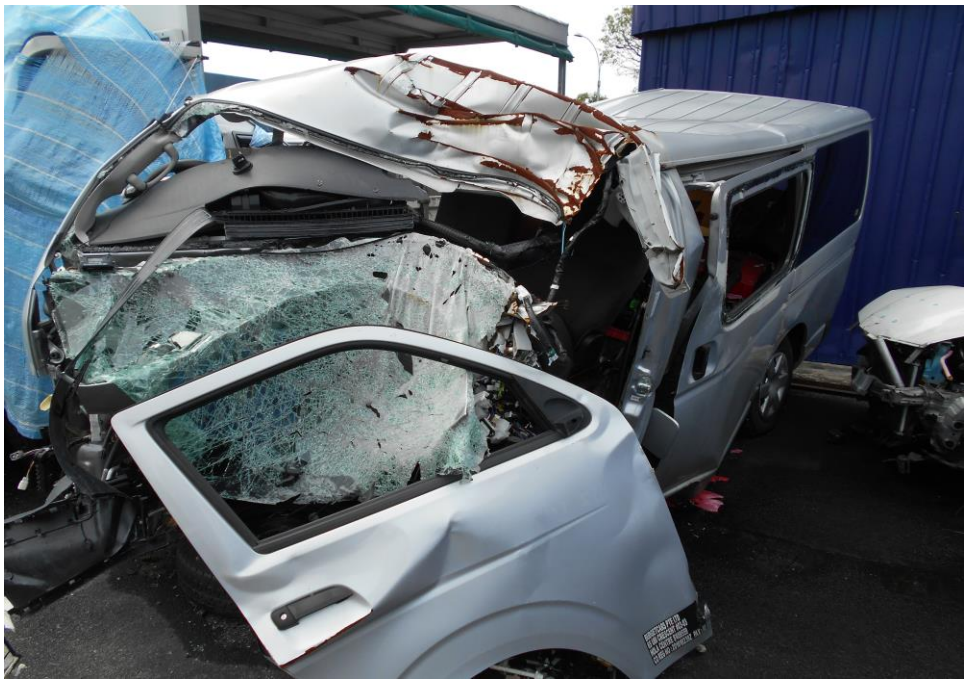


Photo 3 shows a general view of the front left portion of the Motor Van at the time of our inspection. The Motor Van was observed to have sustained with extensive impact damage at its frontal portion.

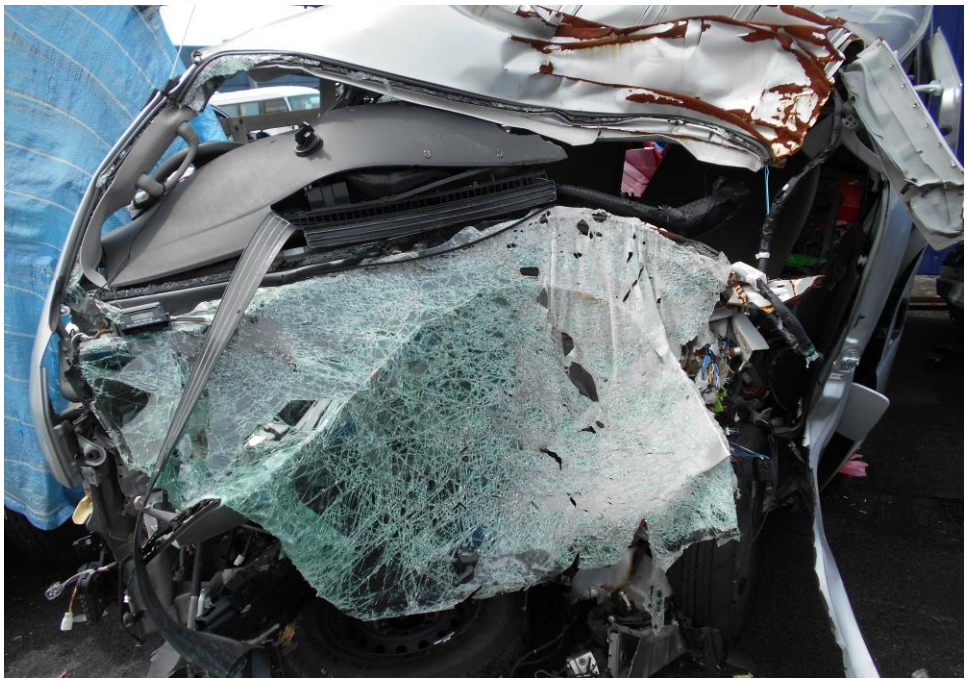


Photo 4 shows a closer view of the damage at the frontal portion of the Motor Van's engine. The impact force was significant, causing the various parts and components inside the engine compartment to be pushed inwards, towards the rear of the Motor Van.

Photo 5 shows a closer view of the damage at the frontal right portion of the Motor Van. The impact force was significant, causing the various parts and components inside the engine compartment to be pushed inwards, towards the rear of the Motor Van.

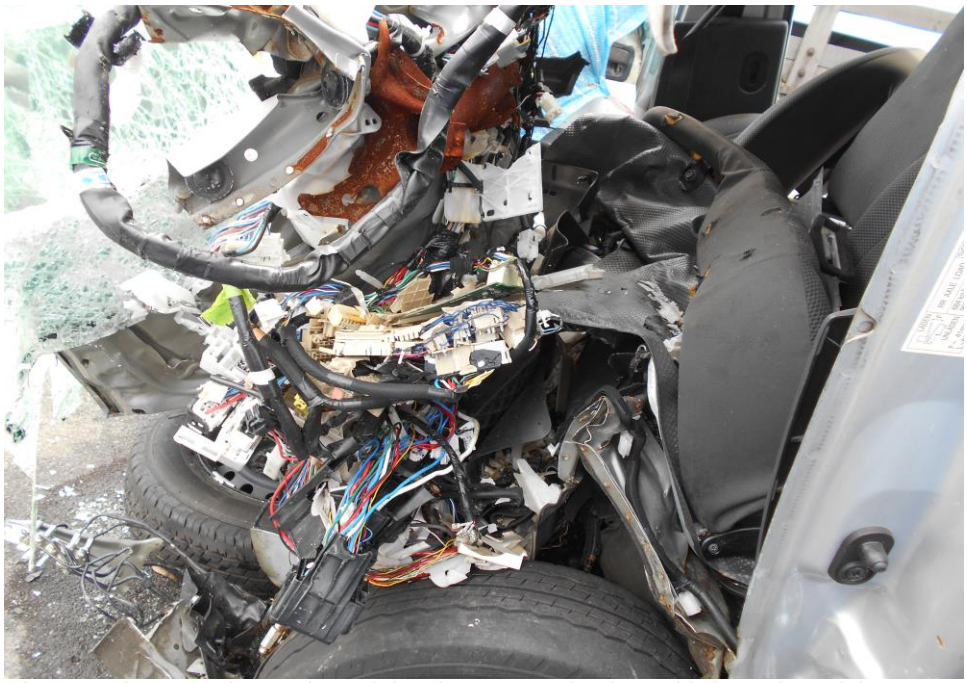


Photo 6 shows a closer view of the damage at the frontal left portion of the Motor Van. The impact force was significant, causing the various parts and components inside the engine compartment to be pushed inwards, towards the rear of the Motor Van.

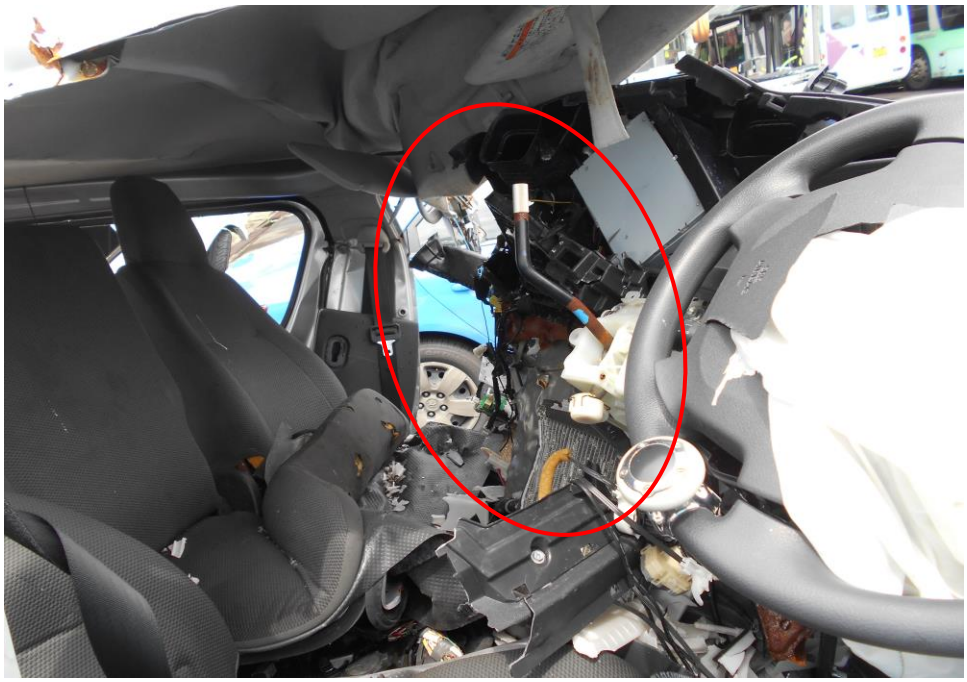


Photo 7 shows a closer view of the damage gear knob at the interior portion of the Motor Van. The impact force was significant, causing the various parts and components inside the engine compartment to be pushed inwards, towards the rear of the Motor Van including its transmission system.

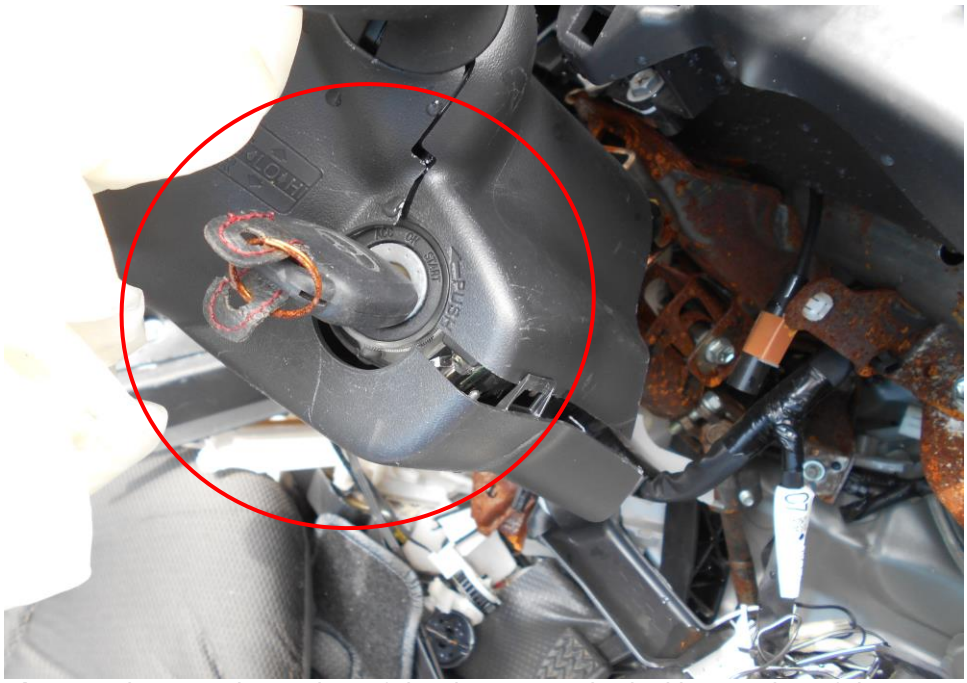


Photo 8 shows a closer view of the damage at the ignition section of the Motor Van. The impact force was significant, causing the various parts and components inside the interior compartment to be pushed inwards, including its ignition system.

Photo 9 shows a closer view of the detached right front door of the Motor Van. The impact force was significant, causing the various parts and components inside the engine compartment to be pushed inwards, towards the rear of the Motor Van. That includes the driver's airbag activation.

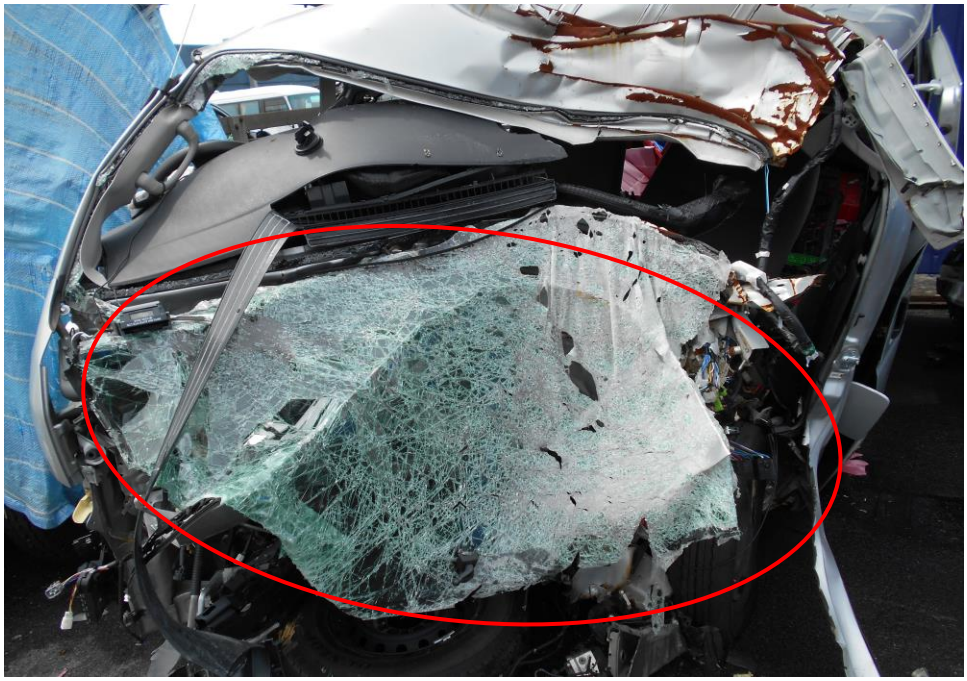


Photo 10 shows a closer view of the damage at the windscreen area of the Motor Van. The impact force was significant, causing the windscreen to sustain a shattering cracked.

Photo 11 shows a closer view of the damaged left passenger door of the Motor Van. The impact force was significant, causing the window glass to be shattered.

Photo 12 shows a closer view of the damaged left passenger door of the Motor Van. The impact force was significant, causing the window glass to be shattered.

Photo 13 shows a general view of the rear left portion of the Motor Van at the time of our inspection. The rear portion was observed to have sustained with minor damages as a result of the accident.

Photo 14 shows a general view of the rear right portion of the Motor Van at the time of our inspection. The rear portion was observed to have sustained with minor damages likely not related to the accident.

Tyres and Wheel Rims

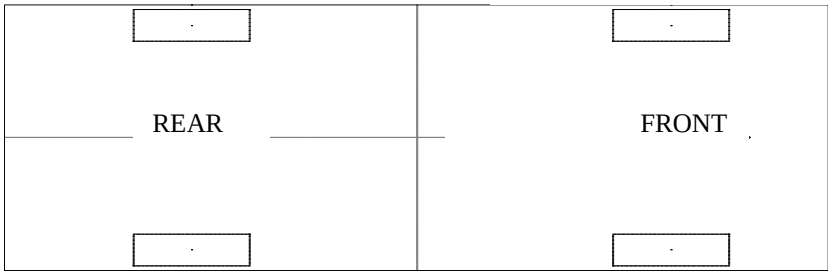
8. The front right tyre and 2 rear tyres of the Motor Van were observed to be in serviceable condition and sufficiently inflated for vehicular operation. We did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 3 tyres.

9. As for the front left tyre it was observed to be punctured by the Motor Van's body metal part at the inner sidewall as a result of the accident's impact collision. It was also found to be deflated at time of our examination.

10. The tyre brand, tyre size and remaining tread depth of the 4 tyres of the Motor Van were recorded as follows:-

Dunlop SP 175N 195/80 R15 (5mm)

Dunlop SP 175N 195/80 R15 (4mm)
(Punctured by metal part)



Dunlop SP 175N 195/80 R15 (5mm)

Dunlop SP 175N 195/80 R15 (4mm)

11. The 4 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any significant damage except for some marks of grazing nature on the wheel rims covers, which are commonly associated to grazing against a road kerb. The tyre brand, tyre size and remaining tread depth of the 4 tyres were recorded as follows: - See photo 15 – 19 below.

Photo 15 shows the condition of the front left tyre of the Motor Van, which was found to be punctured by the Motor Van's body metal part & deflated. However, the tread pattern was still visible (4mm).

Photo 16 shows the condition of the front left tyre of the Motor Van, which was found to be punctured by the Motor Van's body metal part & deflated as a result of the accident.

Photo 17 shows the condition of the front right tyre of the Motor Van, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 18 shows the condition of the rear left tyres of the Motor Van, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation.

Photo 19 shows the condition of the rear right tyres of the Motor Lorry, which were observed to be in serviceable condition with remaining, tread depth of approximately 5mm.

Engine Compartment & Operating Fluids

12. The engine compartment of the Motor Van was severely affected by the collision. Almost all the parts and components inside the engine compartment were badly damaged. Parts like the air intake system, radiation system, exhaust manifold, fuse box and control modules amongst others were found to be damaged.

13. Leakage of the operating fluids such as the brake fluid was visible due to the damages sustained on the braking system. Other operating fluids such as engine coolant, power steering fluid and engine fluid were not able to be access due to the extent of damages sustained. Given the extent of damages to the engine compartment, the leakages were likely due to the accident. The engine undercarriage was also visually observed to be with signs of leakage of fluid at time of our inspection. See photo 20 & 21 below

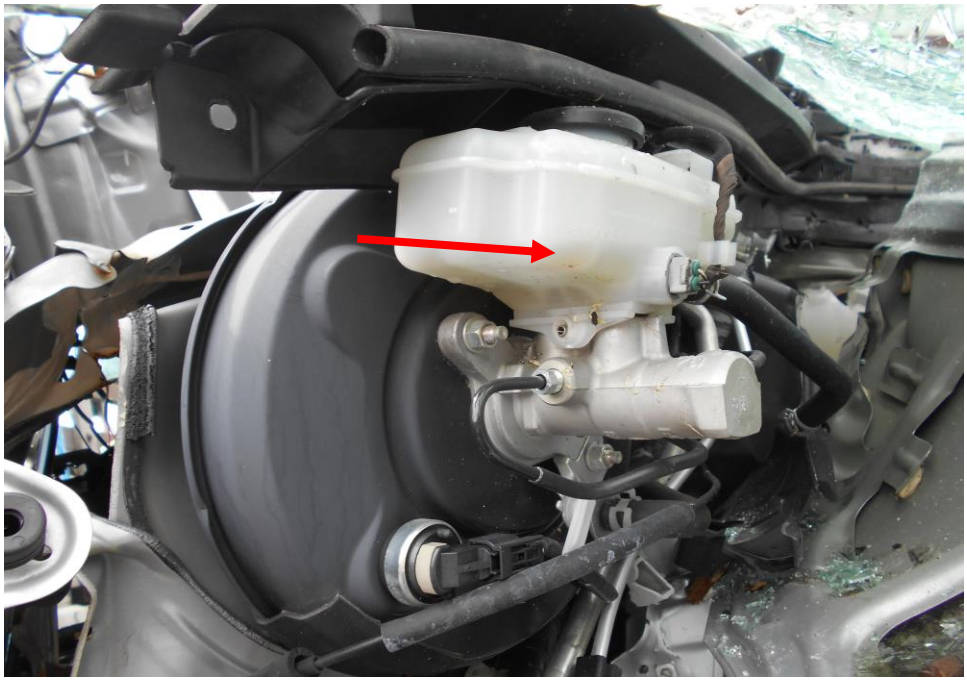


Photo 20 shows the close up view of the brake fluid reservoir that indicates empty content likely due to the accident impact.

Photo 21 shows the close up view of the undercarriage which was observed to be damaged and fluid leakage observed as a result of the accident.

Steering System & Braking System

14. We were not able to conduct any tests on the steering system and braking system of the Motor Van. This was due to the leakage of brake fluid, as well as damage to several mechanical components of the steering system and braking system. See photo 22 - 28 below.

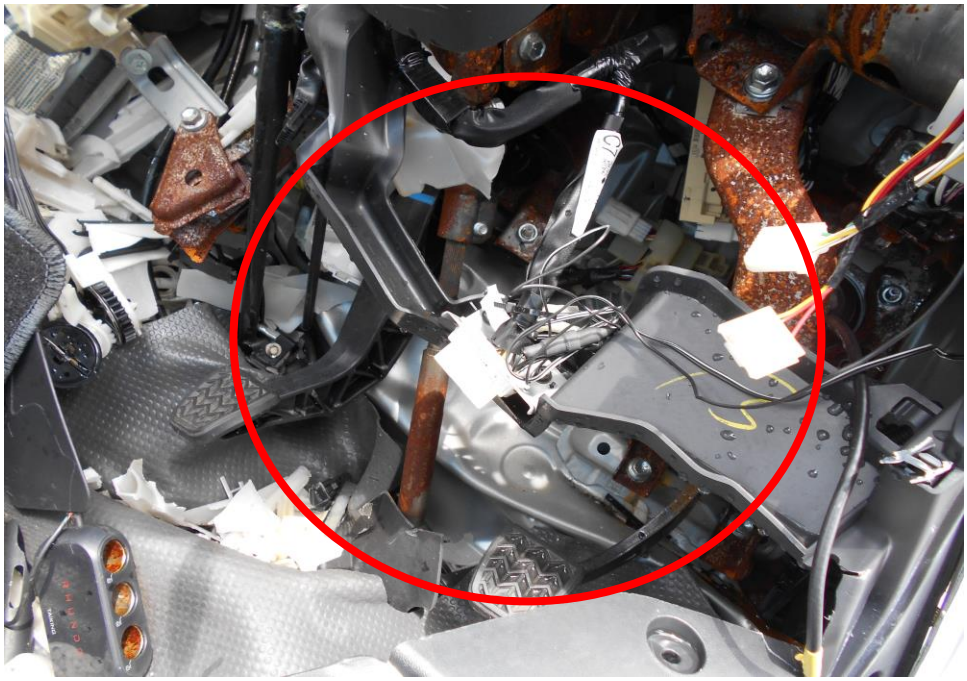


Photo 22 shows the close up view of the brake pedal & steering shaft that was observed to be damaged due to the accident's impact.

Photo 23 shows the close up view of the gear knob that was observed to be damaged due to the accident's impact.

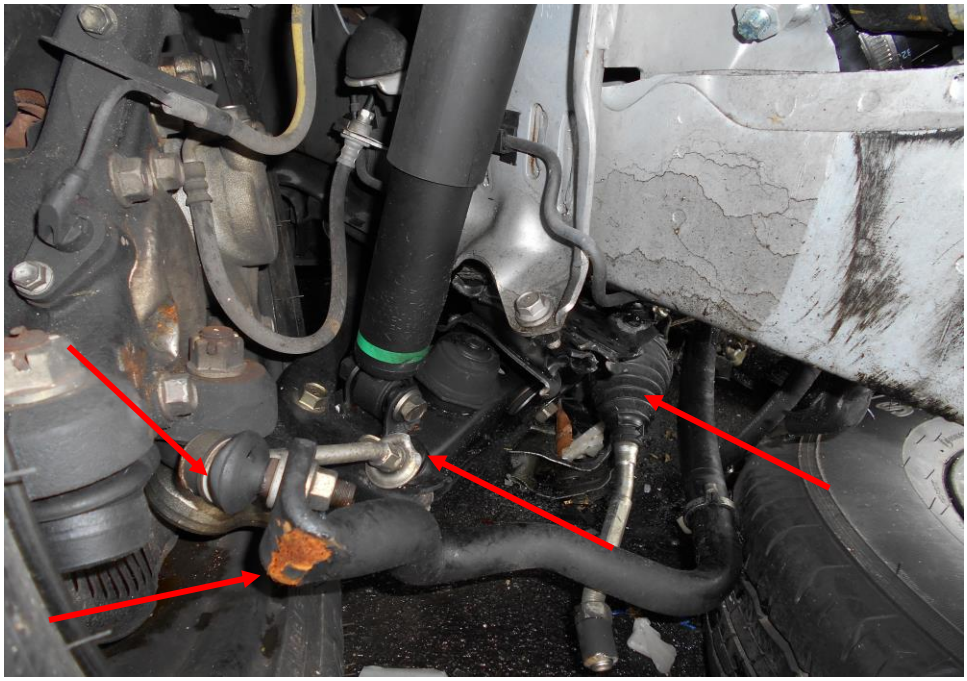


Photo 24 shows the front right steering rack & steering components of the Motor Van. It was observed to be severely damaged by the accident.

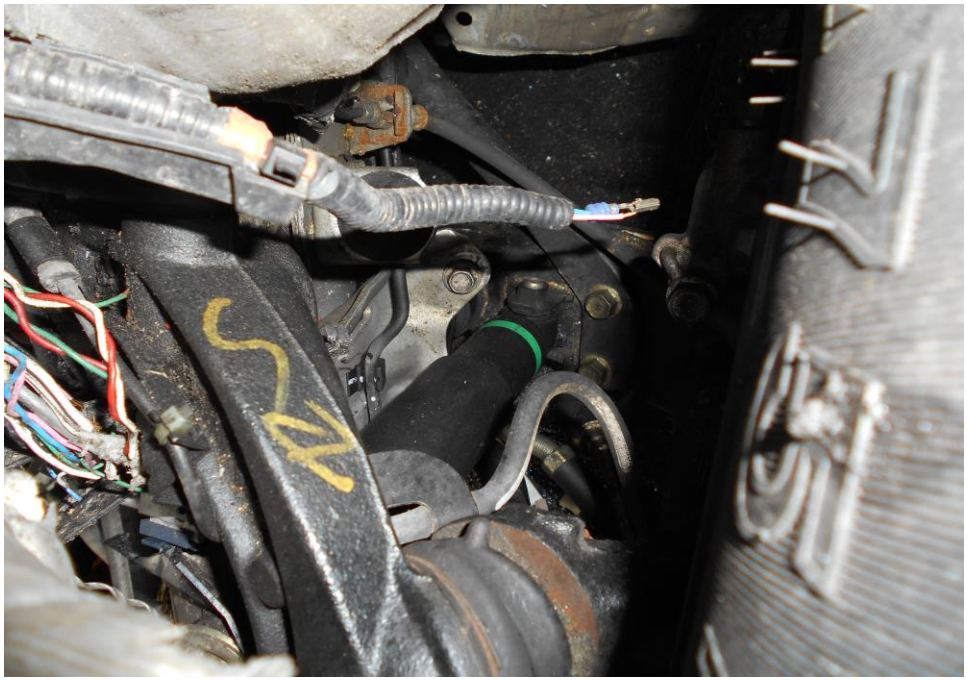


Photo 25 shows the front left steering system of the Motor Van. It was observed to be severely damaged by the accident.

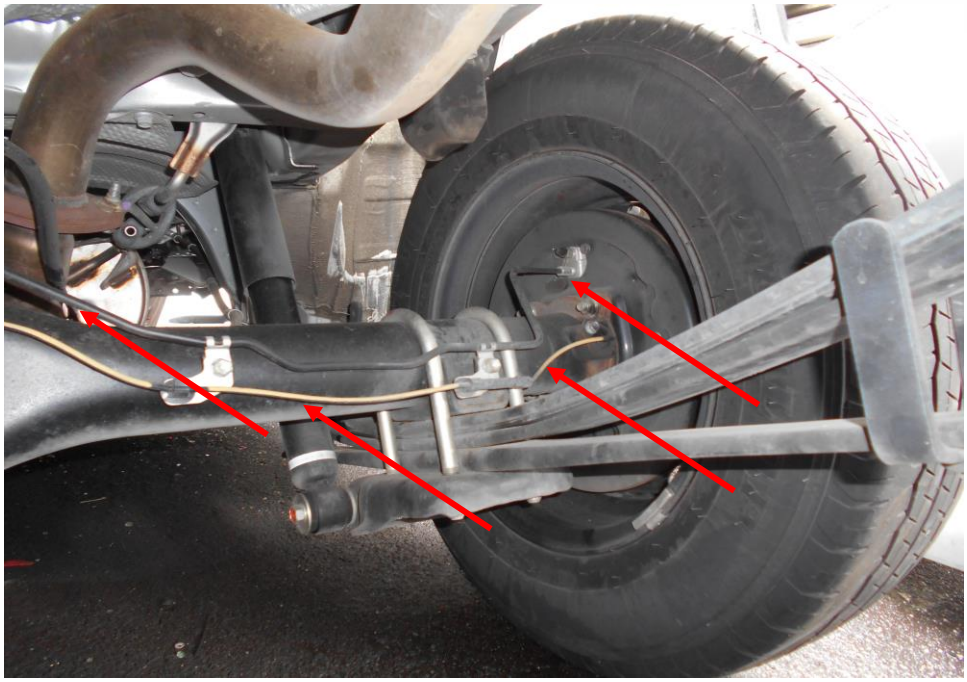


Photo 26 shows the braking components at the rear right wheel of the Motor Van. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Van.

Photo 27 shows the braking component at the left right wheel of the Motor Van. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Van.

Photo 28 shows the rear axle of the Motor Van. It was observed to be in good condition at the time of our inspection of the Motor Van.

Electronic Safety / Warning Indicators

15. The Motor Van's automatic self-test of the functionality of its various operating systems like the Anti-Brake Lock System (ABS) and Supplemental Restraint System (SRS) was not able to be initiated due to major mechanical damages which includes its ignition system and engine system of the Motor Van.

16. The Supplemental Restraint System (SRS) of the Motor Van was however likely to be in normal operating condition at the material time of the accident. The evidence of the deployed driver's airbag indicates that the impact sensors and control module of the Motor Van's SRS were all in serviceable condition at the material time of accident. See photo 29 below.

Photo 35 shows the Supplemental Restraint System (SRS) of the Motor Van was however likely to be in normal operating condition at the material time of the accident. The evidence of the deployed front passenger's airbag indicates that the impact sensors and control module of the Motor Van's SRS were all in serviceable condition at the material time of accident.

Operational Behaviour of the Motor Car

17. No operational test to primarily determine whether there was any abnormality to the engine system, transmission system and braking system of the Motor Van could not be conducted given the extent of damage that it had sustained.

Conclusion

18. For this particular case, we were unable to determine whether there was any possible mechanical failure to the Motor Van that may have contributed to the accident. This was mainly due to the extent of damage that it had sustained. Its engine system, transmission system, steering system and braking system were all damaged as a result of the accident.

19. The front right tyre and 2 rear tyres of the Motor Van were observed to be in serviceable condition and sufficiently inflated for vehicular operation. We 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.

20. As for the front left tyre it was observed to be punctured by the Motor Van's body metal part at the inner sidewall as a result of the accident's impact collision. It was also found to be deflated at time of our examination.

21. Our findings were based solely on a static and visual inspection of the Motor Van. No operational test could be carried out to the Motor Van given the extent of damage that it had sustained as a result of the accident.

Rohaizal A. Rahim
Technical Investigator

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