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

MECHANICAL INSPECTION REPORT OF MOTOR VAN GBE 4790B

1. I refer to your request on 20th June 2019 to conduct a physical inspection of a Motor Van bearing registration number GBE 4790B (herein referred to as "**Motor Van**"), which was involved in a road traffic accident.

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

3. Following the request, I had carried out a physical inspection of the Motor Van on 11th 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.

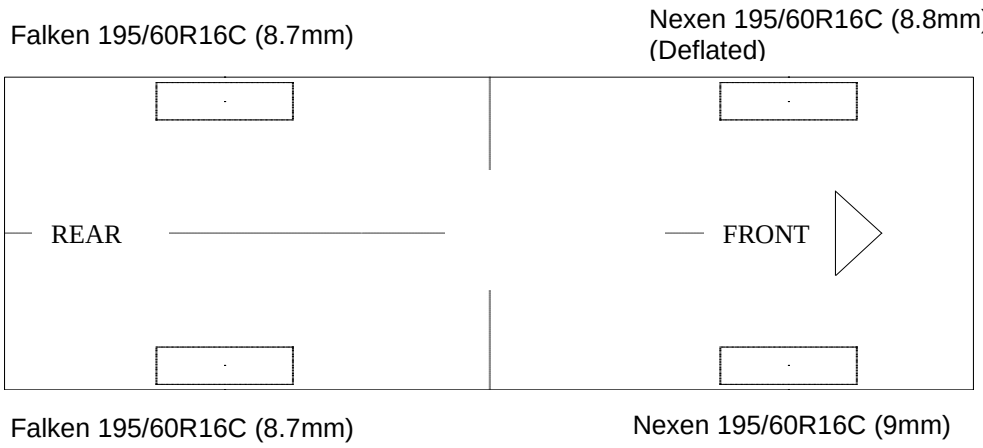
General Condition

4. The mileage of the Motor Van at the time of my inspection was 127,434km.

5. The Motor Van appeared to have sustained moderate damage at its front portion. Its front bumper, left fender panel, front left wheel, its left steering tie rod, its left lower arm were damage and its front left wheel drive shaft was missing at the time of my inspection as a result of the accident.

Tyres and Wheel Rims

6. The front left tyre was observed to be dislodged from the rim and deflated. However the other 3 tyres of the Motor Van were 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 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 4 tyres were observed to be wrapped around standard steel wheel rims however the front left rim was damaged as a result of the accident. While the other 3 wheels 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 Van at the time of my inspection. The mileage of the Motor Van was 127,434km

Photo 2 shows a general view of the front left body of the Motor Van at the time of my inspection. The Motor Van was observed to have sustained moderate damage to its front bumper, left fender, and front left wheel at the time of my inspection.

Photo 3 shows a close up view of the front left body of the Motor Van at the time of my inspection. The Motor Van was observed to have sustained moderate damage to its front bumper, left fender, and front left wheel (arrowed) at the time of my inspection.

Photo 4 shows a general view of the front body of the Motor Van at the time of my inspection. The Motor Van was observed to be unaffected by the accident.

Photo 5 shows a general view of the front right body of the Motor Van at the time of my inspection. The Motor Van was observed to be unaffected by the accident.

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

Photo 7 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 9mm. The tyre, which was wrapped around standard steel 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 Van.

Photo 8 shows the condition of the rear right tyre of the Motor Van, which was observed to be in serviceable condition with remaining tread depth of approximately 8.7mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 9 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 8.7mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 4 steel wheel rims of the Motor Van.

Photo 10 shows the condition of the front left tyres of the Motor Van, which were observed to be dislodged and deflated as a result of the accident with remaining, tread depth of approximately 8.8mm. There was also no tear, cut or burst mark(s) on the outer and the inner sidewalls.

Photo 11 shows the close up view of the condition of the front left tyres and rims of the Motor Van, which were observed to be dislodged, deflated and its rims dented (arrowed) as a result of the accident.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Van'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 Van.

10. My subsequent checks on the underside of the Motor Van also revealed no fluid stain. Visually, the various undercarriage components of the Motor Van 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 Van's engine compartment, which was accessed by lifting the front cabin of the Motor Van. 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 Van 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 Van 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 power steering fluid reservoir of the Motor Van at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 16 shows the engine dip stick of the Motor Van at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.

Photo 17 shows the undercarriage of the Motor Van, 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 Van.

Steering System & Braking System

11. Static brake tests conducted on the Motor Van 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 Van. The braking system of the Motor Van 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 Van was unable to be performed as it has sustained damage to the tie rod & tie rod end of the front left wheel. See photo 18 - 23 below.

Photo 18 shows the various undercarriage components at the front right wheel of the Motor Van, in particular the steering tie rod end (arrowed) and drive shaft (yellow arrow). The various steering components were all found to be intact the various steering components were all found to be intact. There was also no sign of fluid stain(s) observed on the various undercarriage components.

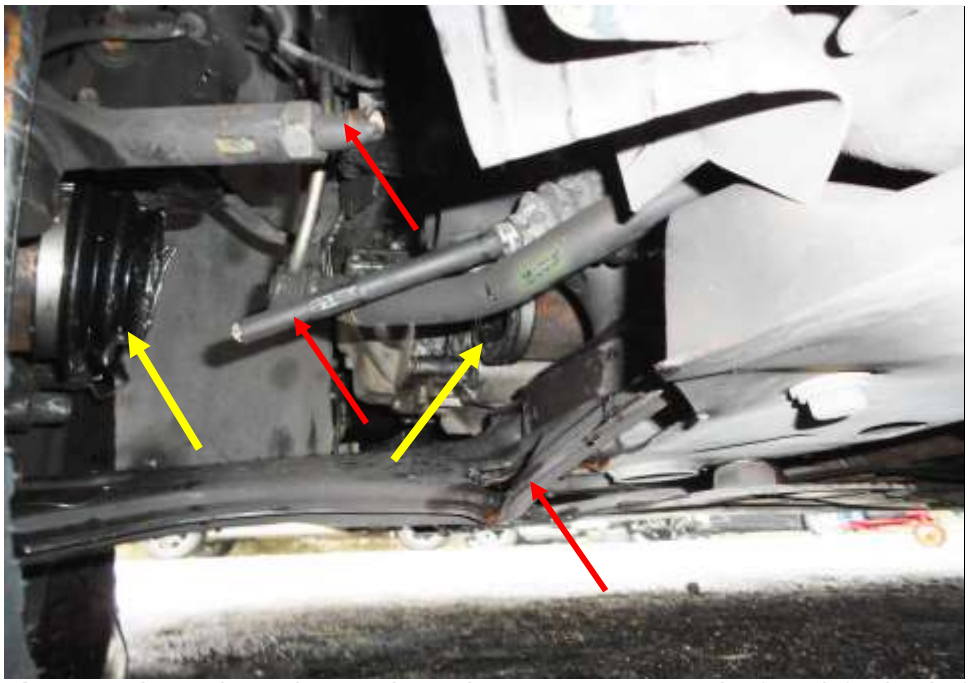


Photo 19 shows the various undercarriage components at the front left wheel of the Motor Van in particular the steering tie rod and the lower arm (red arrow) and drive shaft (yellow arrow) was observed to be damaged and missing as a result of the accident.

Photo 20 shows the brake pipe (arrowed) at the rear left wheel of the Motor Van. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Van. My static tests of the Motor Van'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 Van was likely to be in serviceable condition at the material time of accident.

Photo 21 shows the brake pipe (arrowed) at the rear right wheel of the Motor Van. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Van. My static tests of the Motor Van'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 Van 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 Van. 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 Van. 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.

Electronic Safety / Warning Indicators

13. The Motor Van's automatic self-test of the functionality of its various electronic operating systems like the Anti-Lock Brake System (ABS) and Supplemental Restraint System (SRS) 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 24 & 25 below.

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

Photo 25 shows no warning lights illuminated on the instrument panel of the Motor Van after the engine was cranked. This would suggest that there was no abnormality to the various electronic operating systems of the Motor Van, like the ABS and SRS.

Operational Behaviour of the Motor Van

14. 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 (undercarriage components such as the steering tie rod and drive shaft affected).

Conclusion

15. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Van 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, and suspension system. However static test conducted to its braking system revealed no abnormality and was likely to be in serviceable condition at the material time.

16. The front left tyre was observed to be dislodged from the rim and deflated and the other 3 tyres of the Motor Van was observed to be in serviceable condition and sufficiently inflated for vehicular operation. However 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 with remaining tread depth of approximately 8.7mm – 9mm.

17. Based on our observation, the front light tyre was deflated due to impact as there was no cut or burst mark(s) on the tyre that could have resulted in any sudden deflation (burst) for the driver to lose control of the Motor Van. Furthermore, the front left wheel rim was also found to be dented, a sign of an impact

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