

Your Ref: TP/IP/34802/2022
Our Ref : CI/TPD23001375/N

17 March 2023

Fatal Accident Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR VAN GBE 478E

1. We refer to your request on 7 February 2023 to conduct a physical inspection of a motor van bearing registration number GBE 478E (herein referred to as "**Motor Van**"), which was involved in a fatal road traffic accident on 24 December 2022.
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, we had carried out a physical inspection of the Motor Van on 16 March 2023 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.

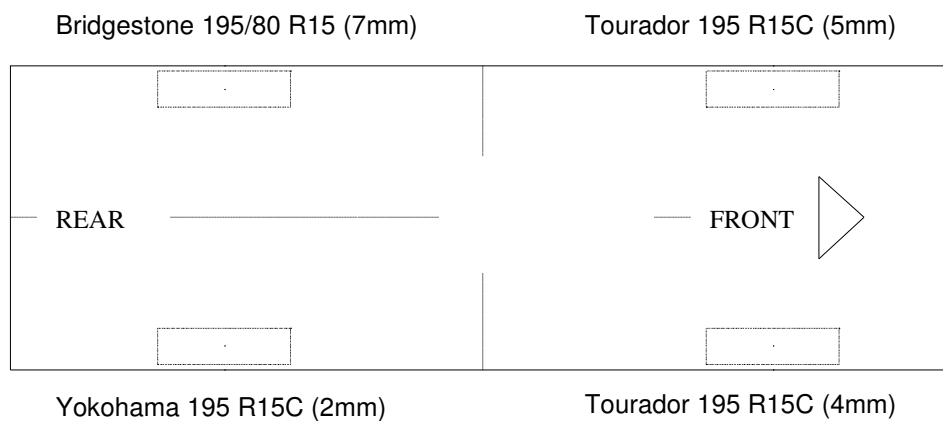
General Condition

4. The mileage of the Motor Van at the time of our inspection was 170, 323km.
5. The Motor Van was observed to have sustained minimal impact damage at its frontal portion. Its front bonnet was dented as a result of the accident.

Tyres and Wheel Rims

6. The Motor Car's front right and rear right tyres were observed to be in serviceable condition. 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 4 tyres. The 4 tyres were also observed to be sufficiently inflated for vehicular operation. The 4 tyres were observed to be in serviceable condition with remaining tread depth of approximately 4mm each.

7. Upon examination of the rear left tyre of the Insured Vehicle, the pattern at the centre portion of the tread was observed to be flushed with the tyre wear indicator. Upon examination of the front left tyre of the Insured Vehicle, the reinforcing belts that are found within the tyre were exposed at the time of our inspection. The tyre brand, tyre size and remaining tread depth of the 4 tyres were recorded as follows:-



8. The 4 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photos 1 – 7 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 minimal impact damage that was confined to its frontal portion. The mileage of the Motor Van was recorded to be 170, 323km.



Photo 2 shows a closer view of the frontal portion of the Motor Van at the time of our inspection. The Motor Van was observed to have sustained minimal impact damage that was confined to its frontal portion. Its front bonnet was dented as a result of the accident (circled).



Photo 3 shows the condition of the front left tyre of the Motor Van, which was observed to be have remaining tread depth of approximately 5mm. However the reinforcing belts that are found within the tyre were exposed at the time of our inspection. 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.



Photo 4 shows the exposed reinforcing belts that are found within the front left tyre of the Motor Van at the time of our inspection (arrowed).



Photo 5 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 a standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 6 shows the condition of the rear left tyre of the Motor Van, which was observed to be in serviceable condition with remaining tread depth of approximately 7mm. However the pattern at the centre portion of the tread was observed to be flushed with the tyre wear indicator (circled). The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 7 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 2mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation. 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.

Engine Compartment & Operating Fluids

9. Upon examination of the Motor Van's engine compartment, we 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.
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 Van. The wirings and cables were also observed to be intact and adequately secured to their respective connectors and/or connecting ports.
11. Our subsequent checks on the underside of the Motor Van 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 photos 8 – 11 below.



Photo 8 shows a general view of the Motor Van'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. The wirings and cables were all observed to be intact and adequately secured to their respective connectors and/or connecting ports.



Photo 9 shows the brake fluid reservoir of the Motor Van at the time of our inspection. The brake fluid was observed to be of sufficient level for operating purposes and without any visible contamination.



Photo 10 shows the engine coolant reservoir of the Motor Van at the time of our inspection. The engine coolant was observed to be of sufficient level for operating purposes and without any visible contamination.



Photo 11 shows the engine dip stick of the Motor Van at the time of our inspection. The engine oil was observed to be of sufficient level for operating purposes and without any visible contamination.

Steering System & Braking System

12. 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.
13. Static test on the steering system of the Motor Van also revealed no abnormality to the steering system. We did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions. Our 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 photos 12 - 16 below.

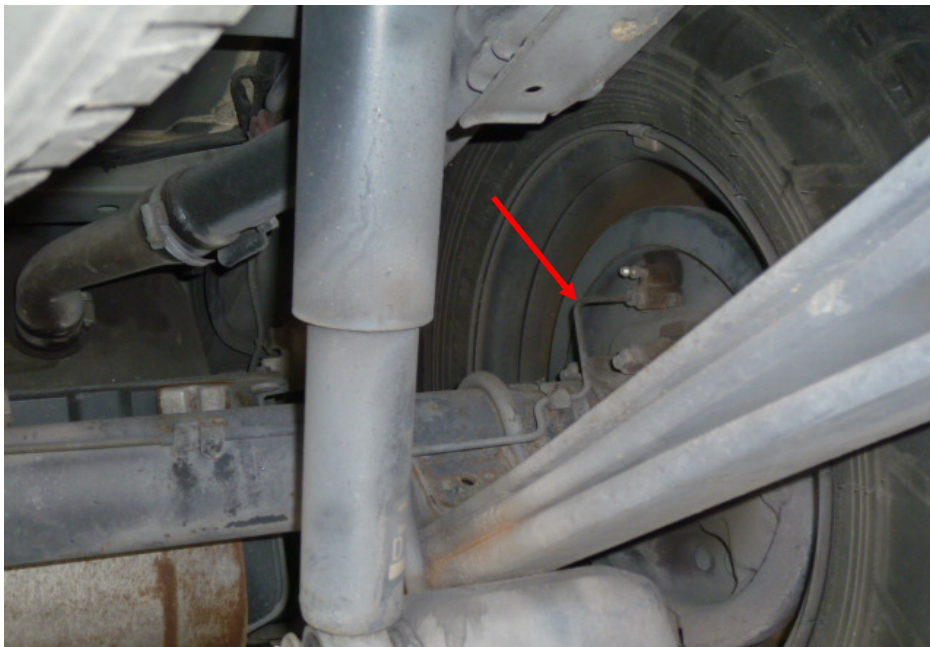


Photo 12 shows the brake pipe (arrowed) at the rear right wheel of the Motor Van. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Van. Our static tests of the Motor Van's braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system was likely to be in serviceable condition at the material time of accident.



Photo 13 shows the front right wheel of the Motor Van turned to its full right. During our steering system test, we did not experience any abnormal free play and/or resistance when we had turned the steering wheel towards the left and right. This would suggest that the steering system of the Motor Van was likely to be in serviceable condition at the material time of accident.



Photo 14 shows the front left wheel of the Motor Van turned to its full left. During our steering system test, we did not experience any abnormal free play and/or resistance when we had turned the steering wheel towards the left and right. This would suggest that the steering system of the Motor Van was likely to be in serviceable condition at the material time of accident.



Photo 15 shows the various undercarriage components at the front right wheel of the Motor Van, in particular the steering tie rod (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Motor Van 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 16 shows the various undercarriage components at the front left wheel of the Motor Van, in particular the steering tie rod (arrowed). The various undercarriage components of the Motor Van 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.

Electronic Safety / Warning Indicators

14. The Motor Van's automatic self-test of the functionality of its various electronic operating systems like the Antilock Braking System (ABS) 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 photos 17 & 18 below.



Photo 17 shows the warning lights for the various electronic operating systems of the Motor Van appearing on its instrument panel during the self-test when the engine is cranked, in particular the Antilock Braking System (ABS) light (arrowed).




Photo 18 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.

Operational Behaviour of the Motor Van

15. A short operational test of the Motor Van, to primarily determine whether there was any abnormality to its engine system, its transmission system, steering system and braking system was subsequently carried out. The test was conducted by driving the Motor Van forward, stopping, before reversing and coming to a stop again.
16. During the operational test, the various transmission gears of the Motor Van were able to be engaged without any difficulty by stepping on the clutch pedal and manually shifting the gear lever. There were no abnormal sounds heard and/or abnormal behaviour of the Motor Van's engine system. It was able to move forward and backward normally. The braking system was also found to be in working condition as the Motor Van was able to slow down and come to a complete stop upon depressing of the brake pedal.

Conclusion

17. From our physical inspection of the Motor Van, it appears that its engine system, steering system, braking system and transmission system were all in serviceable condition. We did not find any evidence(s) to suggest that there was possible mechanical failure to the Motor Van that may have caused and/or contributed to the accident. This is also taking into consideration that the operational test of the Motor Van, which we had conducted, did not produce any sign(s) or symptom(s) to suggest that there was any abnormality to its various operating systems.
18. The front right, rear right and rear left tyre of the Motor Van were found to be in serviceable condition with remaining tread depth of approximately 4mm each. The front left tyre of the Motor Van was found not to be in serviceable condition. The 4 tyres were also observed to be sufficiently inflated for vehicular operation.

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