

Your Ref: TP/IP/68603/2018  
Our Ref: CI/TPD19000751/P

26<sup>th</sup> April 2019

**Fatal Accident Investigation Team**

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

**MECHANICAL INSPECTION REPORT OF MOTOR LORRY GBG 7101K**

1. We refer to your request on 28<sup>th</sup> December 2018 to conduct a physical inspection of a motor lorry bearing registration number GBG 7101K (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident on 12<sup>th</sup> December 2018.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident.
3. Following the request, we had carried out a physical inspection of the Motor Lorry on 4<sup>th</sup> March 2019 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 Lorry at the time of our inspection was recorded as 45,751km.
5. The Motor Lorry was observed to have sustained minor damage at its rear left tailgate that was likely due to a result of the accident. See photo 1 – 6.

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**Photo 1** shows the mileage of the Motor Lorry at the time of our inspection was recorded as 45,751km.



**Photo 2** shows a general view of the front portion of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good condition unaffected by the accident's impact.





**Photo 3** shows a general view of the right body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good condition unaffected by the accident's impact.



**Photo 4** shows a general view of the left body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good condition unaffected by the accident's impact.



**Photo 5** shows the general view of the rear tailgate of the Motor Lorry. It was observed to have sustained damages around the rear left portion as a result of the accident.



**Photo 6** shows the close up view of the rear tailgate of the Motor Lorry. It was observed to have sustained damages around the rear left brake lamps and body panel (Arrowed) as a result of the accident.

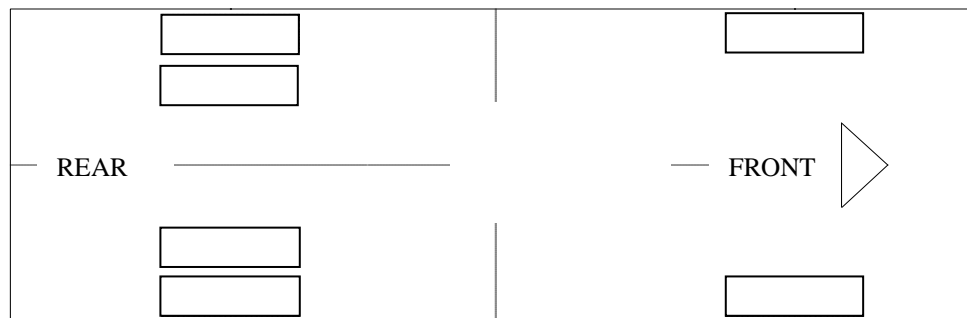


## Tyres and Wheel Rims

6. The 2 front tyres and 4 rear tyres of the Motor Lorry 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 6 tyres. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Lorry were recorded as follows:-

Dunlop155/R13 (4.4mm)

Leao 195/70 R15c (8.1mm)



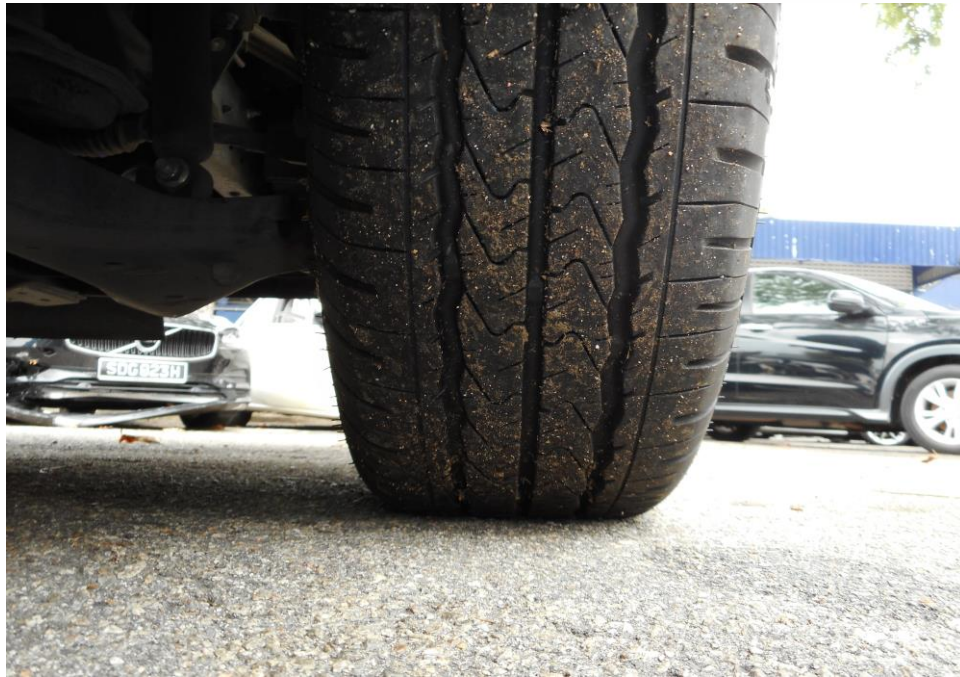
Dunlop 155/R13 (3.4mm)

Leao 195/70 R15c (9.1mm)

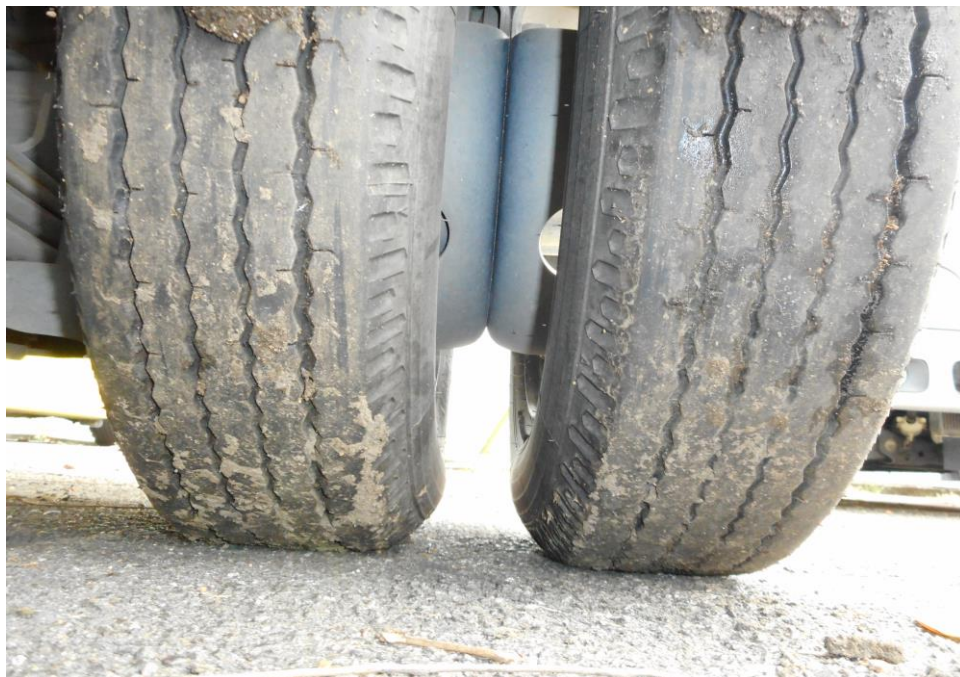
7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damages. See photo 7 – 10 below.



**Photo 7** shows the condition of the front left tyre of the Motor Lorry, which observed to be in serviceable condition with remaining tread depth of approximately 8.1mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



**Photo 8** shows the condition of the front right tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 9.1mm. The tyre, which was wrapped around standard alloy 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 Lorry, which observed to be in serviceable condition with remaining tread depth of approximately 4.4mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation.





**Photo 10** 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 3.4mm.

### **Engine Compartment & Operating Fluids**

8. Upon examination of the Motor Lorry's engine compartment, we had observed that all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, engine oil, engine coolant and power steering fluids 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 found that there was no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.
10. Our subsequent checks on the underside of the Motor Lorry also revealed no sign of fluid stain. Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photo 11 – 16 below.



**Photo 11** shows a general view of the Motor Lorry's engine compartment, which was accessed by lifting the front cabin of the Motor Lorry. 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.



**Photo 12** shows the brake fluid reservoir of the Motor Lorry at the time of our inspection. The brake fluid was observed to be of sufficient level and without any visible contamination (arrowed).





**Photo 13** shows the engine coolant reservoir of the Motor Lorry at the time of our inspection. The engine coolant was observed to be of sufficient level and without any visible contamination (arrowed).



**Photo 14** shows the engine dip stick of the Motor Lorry at the time of our inspection. The engine oil was observed to be of sufficient level and without any visible contamination.



**Photo 15** shows the power steering reservoir of the Motor Lorry at the time of our inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination (circled).



**Photo 16** shows the undercarriage of the engine of the Motor Lorry at the time of our inspection. There was also no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine.

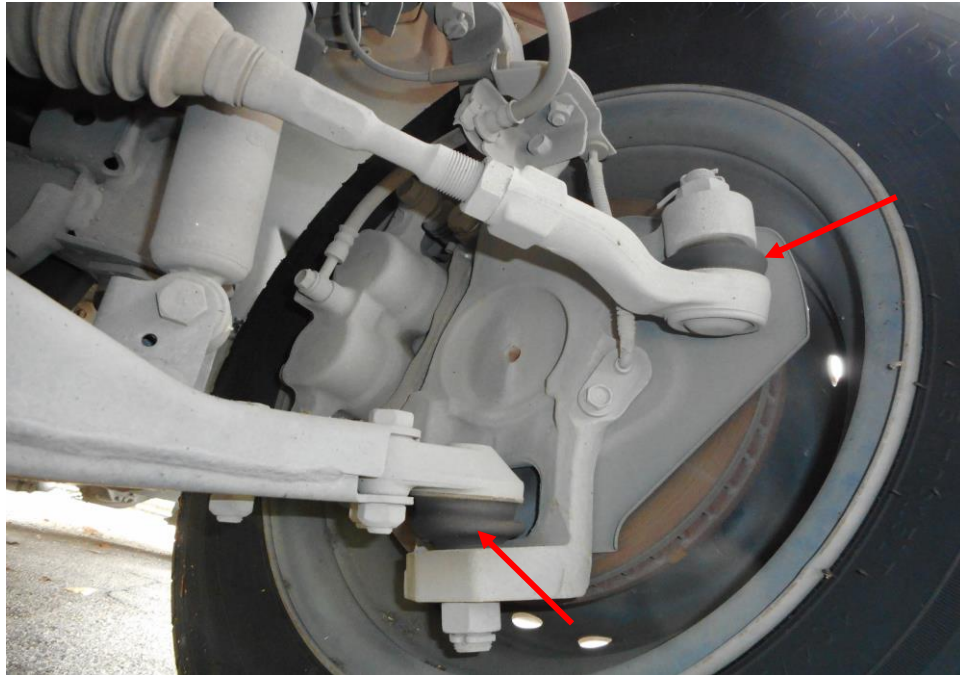


## Steering System & Braking System

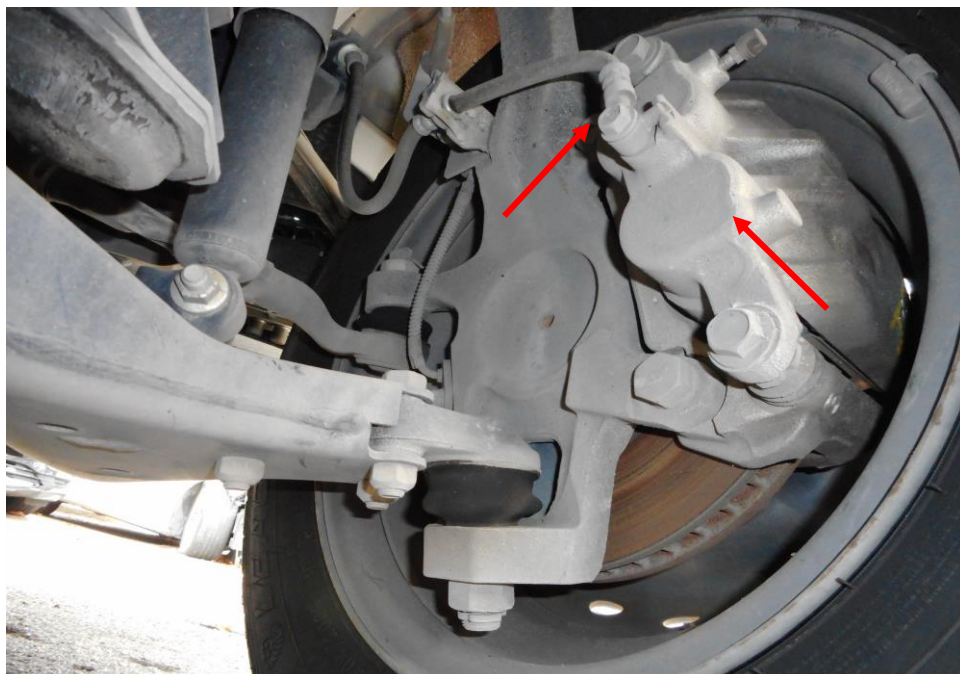
11. The mechanical components of the Motor Lorry steering system were all found to be visually intact and undamaged. The steering wheel, steering tie rods, drive shafts and ball joints of the Motor Lorry were observed to be intact and securely attached to the front left wheel and front right wheel.
12. Static test on the steering system of the Motor Lorry 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 photo 17 – 22.



**Photo 17** shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the steering tie rod end and ball joints (arrowed). The various undercarriage components of the Motor Lorry 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 18** shows the various undercarriage components at the front right wheel of the Motor Lorry, in particular the steering tie rod end and ball joints (arrowed). The various undercarriage components of the Motor Lorry 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 19** shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the brake hose and callipers (arrowed). The various undercarriage components of the Motor Lorry 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 various undercarriage components at the front and right wheel of the Motor Lorry, in particular the brake hose and callipers (arrowed). The various undercarriage components of the Motor Lorry 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 21** shows the various undercarriage components at the rear left wheel of the Motor Lorry, in particular the brake hose and drum brake (arrowed). The various undercarriage components of the Motor Lorry 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 22** shows the various undercarriage components at the rear right wheel of the Motor Lorry, in particular the brake hose and drum brake (arrowed). The various undercarriage components of the Motor Lorry 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.

14. Static brake tests conducted on the Motor Lorry 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 Lorry. The braking system of the Motor Lorry 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.
15. Checks on the brake shoes (brake pads) at the rear wheels of the Motor Lorry revealed that the brake shoes (brake pads) were in serviceable condition with sufficient frictional material for operational purposes. In general, our visual inspection of the mechanical components of the Motor Lorry's braking system appear to suggest that its braking system was in serviceable condition at the material time of accident.



## Electronic Safety / Warning Indicators

16. The static test of the Motor Lorry electronic safety feature(s) like Anti-Brake Lock System (ABS), Supplemental Restraint System (SRS) was in serviceable condition at the material time of accident. See Photo 23 & 24.



**Photo 23 & 24** shows the Motor Lorry electronic safety feature(s) like Anti-Brake Lock System (ABS), Supplemental Restraint System (SRS) before and after the engine was started. All was in serviceable condition at the material time of accident. See above

### **Operational Behaviour of the Motor Lorry**

17. A short operational test of the Motor Lorry, 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 subsequently carried out. The test was conducted by driving the Motor Lorry forward, stopping, before reversing and coming to a stop again.
18. During the operational test, the various transmission gears of the Motor Lorry were able to be engaged without any difficulty by stepping on the clutch pedal and manually shifting the gear lever and driven test was done. There were no abnormal sound heard.
19. During the operational test, no abnormal behaviour was found of the Motor Lorry'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 Lorry was able to slow down and come to a complete stop upon depressing of the brake pedal. See photo 25 – 28.



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**Photo 25** shows the operational test. The Motor Lorry is in serviceable condition at the time tested.



**Photo 26** shows the operational test. The Motor Lorry is in serviceable condition at the time tested.



**Photo 27** shows the operational test on the Motor Lorry. It was observed to be in serviceable condition. Operational test such as moving forward, braking test on the Motor Lorry was conducted successfully.



**Photo 28** above shows the operational test on the Motor Lorry. It was observed to be in serviceable condition. Operational test such as moving forward, braking test on the Motor Lorry was conducted successfully.



## Conclusion

20. From our physical inspection of the Motor Lorry, 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 Lorry that may have caused and/or contributed to the accident. This is also taking into consideration that the operational test of the Motor Lorry, 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.
21. The 2 front tyres and 4 rear tyres fitted on the Motor Lorry were also found 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 6 tyres. The 6 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3.4mm to 9.1mm each.

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