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/45327/2018
Our Ref : CI/TPD18016120/Z

03rd January 2019

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

MECHANICAL INSPECTION REPORT OF MOTOR LORRY GBF 3128R

1. We refer to your request on 01st September 2018 to conduct a physical inspection of a motor lorry bearing registration number GBF 3128R (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident on 13th August 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 01st October 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 Lorry at the time of our inspection was recorded as 36370km.

5. The Motor Lorry was observed to have sustained minor damages at its front right headlamp; front right lower bumper and its front right door were amongst the body parts that were damaged as a result of the accident. See photo 1 to 6 below.

Photo 1 shows the mileage of the Motor Lorry at the time of our inspection was recorded as 36370km.

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 have sustained minor damages at its front right headlamp, front right lower bumper and its right driver door were amongst the body parts that were damaged as a result of the accident.

Photo 3 shows a damaged headlamp, lower bumper and right door likely due to the accident's impact.

Photo 4 shows the close-up view of the damaged right door of the Motor Lorry. It was observed to have sustained damages as a result of the accidents.

Photo 5 shows a general view of the front left 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.

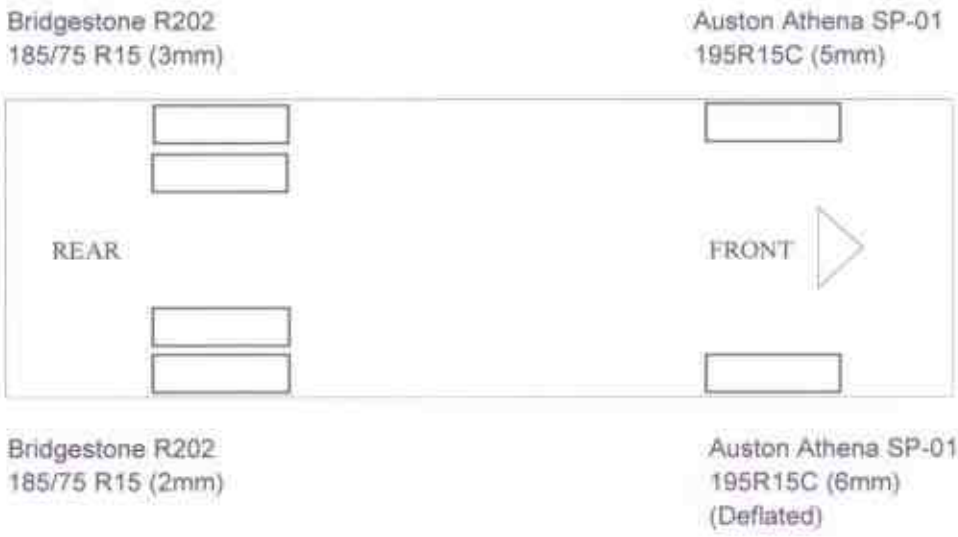
Photo 6 shows a general view of the Motor Lorry's rear body at the time of our inspection. There was no damage found to the rear portion of the Motor Lorry.

Tyres and Wheel Rims

6. The front left tyre 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 5 tyres.

7. As for the front right tyre it was observed to be torn at the outer sidewall as a result of the accident's impact collision. It was also found to be deflated at time of our examination.

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



9. The 5 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damages except for the front right tyre that was observed to be deflated & torn as a result of the accident's impact collision. See photo 7 – 12 below.

Photo 7 shows the condition of the front left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm. 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 deflated & torn at the outer sidewall as a result of the accident. The remaining tread depth was measured at approximately 6mm.

Photo 9 shows the condition of the front right tyre of the Motor Lorry, which was observed to be deflated & torn at the outer sidewall as a result of the accident. The remaining tread depth was measured at approximately 6mm.

Photo 10 shows the close-up view condition of the front right tyre of the Motor Lorry, which was observed to be deflated & torn at the outer sidewall as a result of the accident. The remaining tread depth was measured at approximately 6mm.

Photo 11 shows the condition of the rear left tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 3mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation.

Photo 12 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 2mm.

Engine Compartment & Operating Fluids

10. 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 and engine coolant were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.

11. 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.

12. 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 13 – 16 below.

Photo 13 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 14 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).

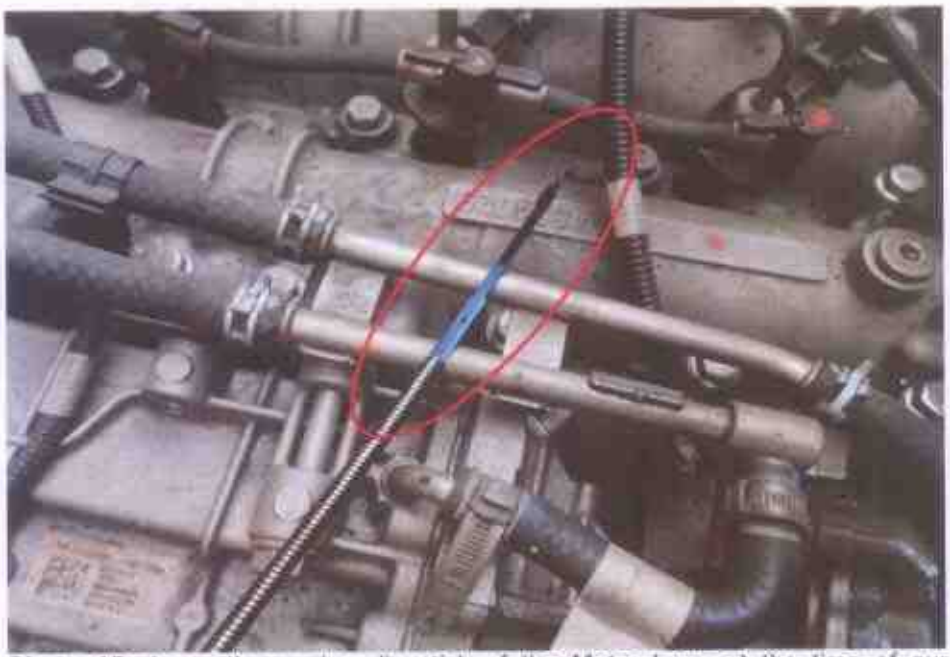


Photo 15 shows the engine dip stick of the Motor Lorry at the time of our inspection. The engine oil was observed to be of sufficient level and without any visible contamination (circled).

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

Steering System & Braking System

13. 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.

14. 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 & 18 below.

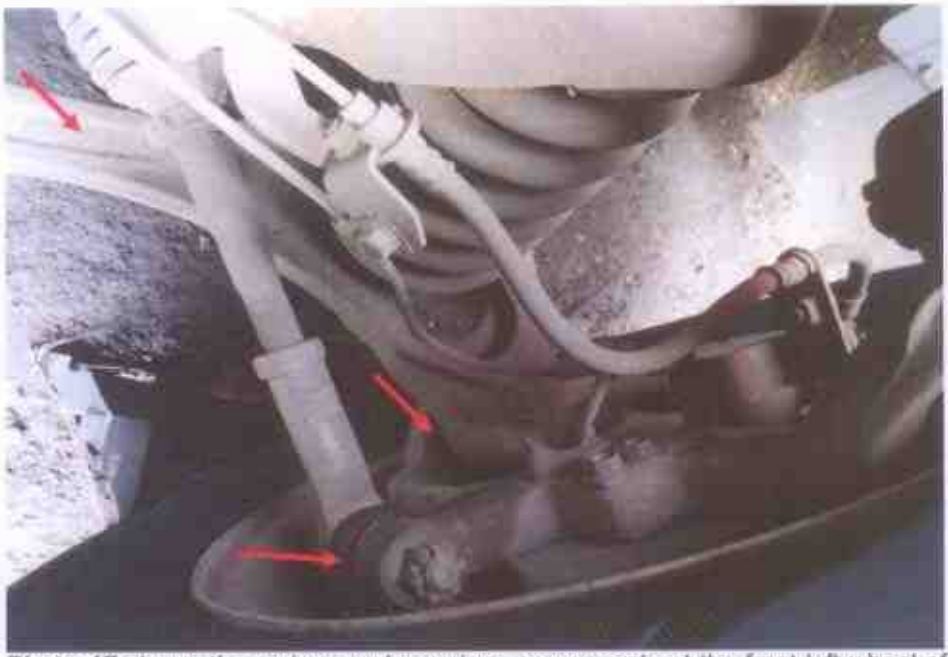


Photo 17 shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various undercarriage components of the Motor Lorry were all found to be intact without any visible damage. There was also no sign of fluid stain(s) observed 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 (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.

15. 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.

16. 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. See photo 19 & 20 below.

Photo 19 shows the various undercarriage components at the rear right wheels of the Motor Lorry. There was no sign(s) of brake fluid leakage along the brake hoses and brake pipes.

Photo 20 shows the various undercarriage components at the rear left wheels of the Motor Lorry. There was no sign(s) of brake fluid leakage along the brake hoses and brake pipes.

Electronic Safety / Warning Indicators

17. The Motor Lorry's automatic self-test of the functionality of its various electronic operating systems like the Anti-Locking Braking System (ABS), engine checked, Battery light, Engine Fluid and etc. 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 21 & 22 below.

Photo 21 shows the warning lights for the various electronic operating systems of the Motor Car appearing on its instrument panel during the self-test when the engine was cranked.

Photo 22 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 Car.

Operational Behaviour of the Motor Lorry

18. 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.

19. 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. There were no abnormal sound heard and/or abnormal behaviour 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 23 & 24 below.

Photo 23 shows the operational test on the Motor Lorry. It was observed to be in serviceable condition. Operational test such as moving forward, turn left & right and also braking test on the Motor Lorry was conducted successfully.

Photo 24 shows the operational test on the Motor Lorry. It was observed to be in serviceable condition. Operational test such as moving forward, reverse, turn left & right and also 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 front left tyre 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 5 tyres. As for the front right tyre it was observed to be torn at the outer sidewall as a result of the accident's impact collision. It was also found to be deflated at time of our examination. The remaining tread depths were found to be at approximately 2mm to 6mm each.

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)