

Your Ref: TP/IP/29253/2020
Our Ref : CI/TPD20009194/P

30th November 2020

Fatal Accident Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR LORRY YP 4458G

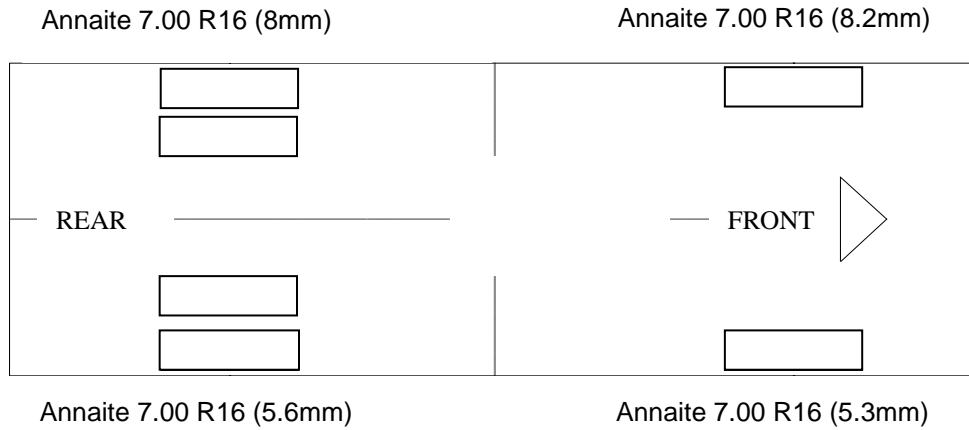
1. I refer to your request on 31st August 2020 to conduct a physical inspection of a Motor Lorry bearing registration number YP 4458G (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident.
3. Following the request, I had carried out a visual inspection of the Motor Lorry on 26th November 2020 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 Lorry at the time of my inspection was not recorded despite multiple attempts to start the engine of the Motor Lorry.
5. The Motor Lorry was observed to have sustained damage at its front portion. Its front windscreen, front body panel, front right rear view mirror and front right headlamp were damaged as a result of the accident.

Tyres and Wheel Rims

6. The condition of the 6 tyres of the Motor Lorry were observed to be in serviceable condition and sufficiently inflated for vehicular operation. 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 6 tyres. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Lorry were recorded as follows:-



7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 10 below.



Photo 1 shows a general view of the Motor Lorry's frontal portion at the time of my inspection. The Motor Lorry was observed to sustained damage at its front portion. Its front windscreen, front body panel, front right rear view mirror and front right headlamp were damaged as a result of the accident.



Photo 2 shows a close up view of the Motor Lorry's frontal portion at the time of my inspection. The Motor Lorry was observed to sustained damage at its front portion. Its front windscreen (red arrow) and front right rear view mirror (yellow arrow) were damaged as a result of the accident.



Photo 3 shows a close up view of the Motor Lorry's frontal portion at the time of my inspection. The Motor Lorry was observed to sustained damage at its front portion. Its front body panel (red arrow) and front right headlamp (yellow arrow) were damaged as a result of the accident.

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



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

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



Photo 7 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 5.3mm. 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 6 tyres that were fitted on the Motor Lorry.



Photo 8 shows the condition of the rear right tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining, tread depth of approximately 5.6mm. 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 6 steel wheel rims of the Motor Lorry.



Photo 9 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 8mm. 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 6 steel wheel rims of the Motor Lorry.



Photo 10 shows the condition of the front left tyre of the Motor Lorry, which were observed to be in serviceable condition with remaining, tread depth of approximately 8.2mm. 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 6 tyres that were fitted on the Motor Lorry.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Lorry'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 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 Lorry.
10. My subsequent checks on the underside of the Motor Lorry also revealed no 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.

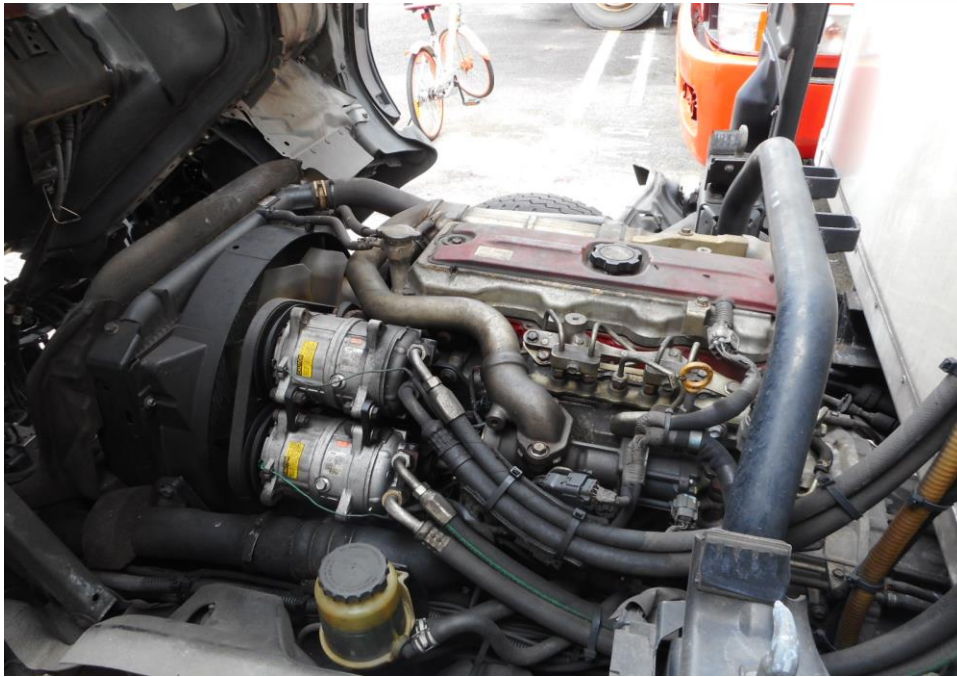


Photo 11 shows a general view of the Motor Lorry's engine compartment, which was accessed by lifting the front cabin of the Motor Lorry. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment



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

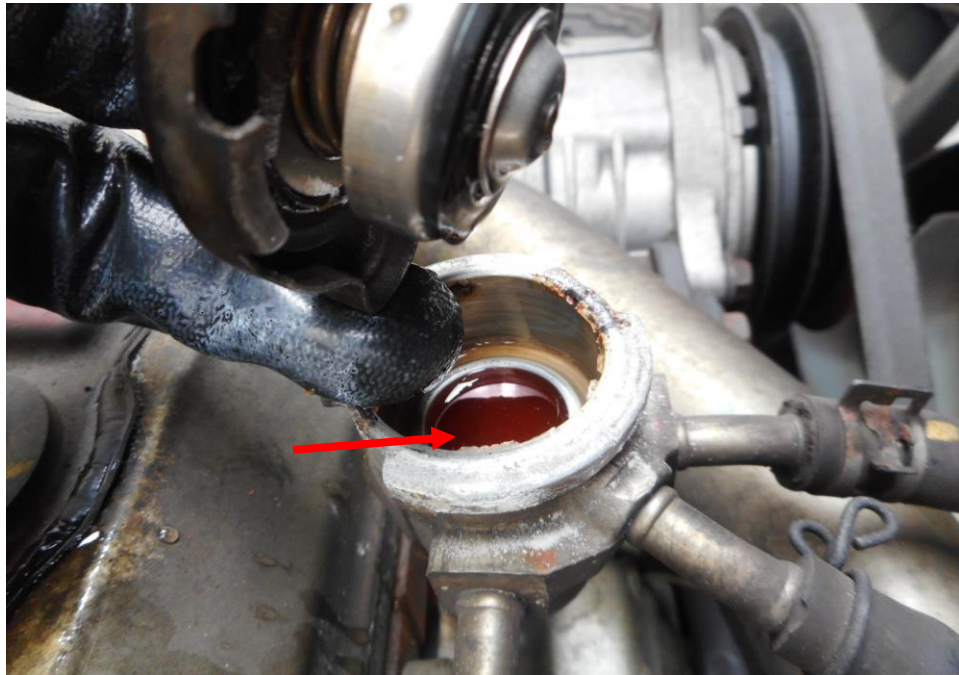


Photo 13 shows the engine coolant reservoir of the Motor Lorry at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.



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



Photo 15 shows the power steering fluid dip stick of the Motor Lorry at the time of my inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination.



Photo 16 shows the undercarriage of the Motor Lorry, at the area where the engine housing and transmission housing are located. I did find old fluid stain on the underside of the Motor Lorry.

Steering System & Braking System

11. 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.
12. Static test on the steering system of the Motor Lorry was not conduct as the Motor Lorry was unable to be started. However, my 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 - 23 below.

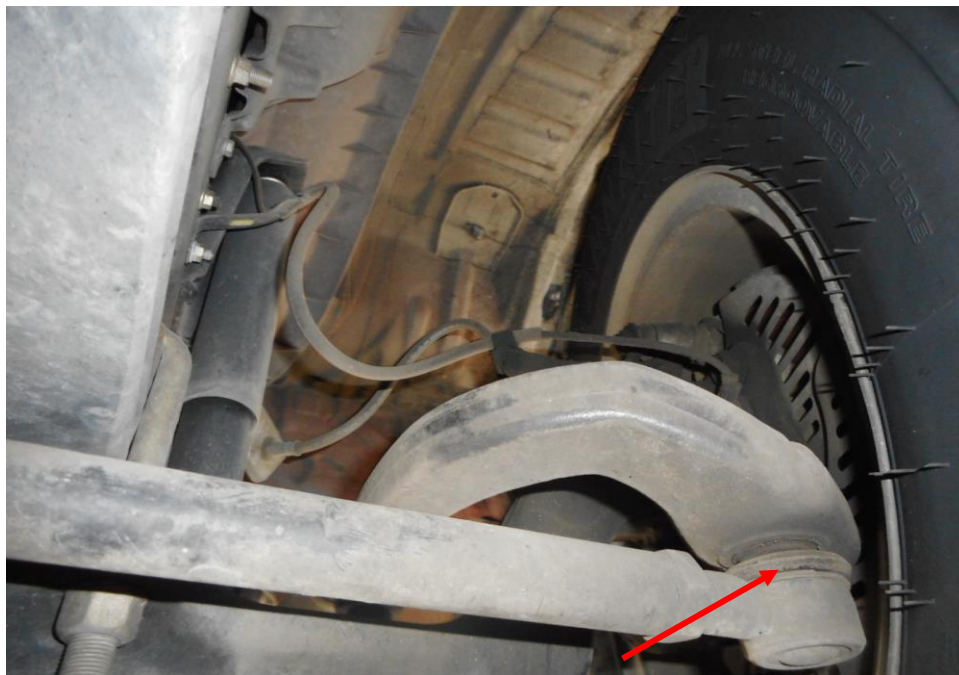


Photo 17 shows the various undercarriage components at the front right wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Motor Lorry was likely to be in serviceable condition at the material time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.



Photo 18 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 19 shows the brake pipe (arrowed) at the rear right wheel of the Motor Lorry. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Lorry. My static tests of the Motor Lorry'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 Lorry was likely to be in serviceable condition at the material time of accident.



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

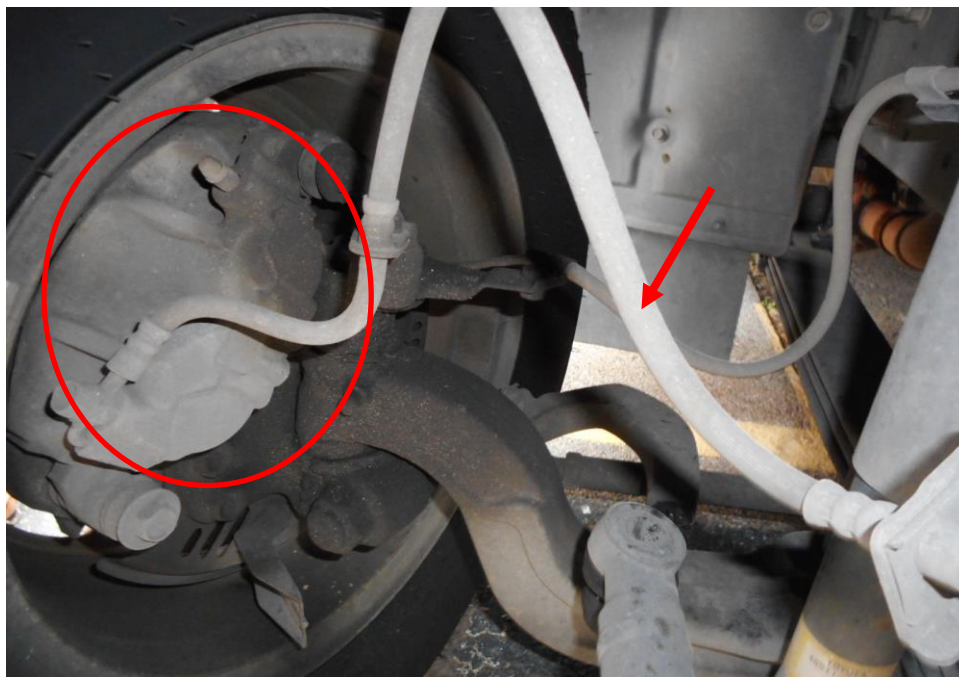


Photo 21 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Lorry. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.



Photo 22 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Lorry. 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. Motor Lorry's automatic self-test of the functionality of its various electronic operating systems was not able to be conducted as the engine of the Motor Lorry was not able to be started up.

Seat Belts

14. The Front right and front left, seat belts of the “Motor Lorry” were tested and all the seat belts were able to be fastened securely into the respective pretensioners that were fitted at the sides of each seat.

Operational Behaviour of the Motor Lorry

15. Operational test by driving the Motor Lorry to primarily determine whether there was any abnormality to the engine system, transmission system and braking system of the Motor Lorry could not be conducted given the extent of damage that it had sustained had and the engine of the Motor Lorry was also not able to be started up.

Conclusion

16. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Lorry 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.
17. However static brake tests able to be conducted and In general our visual inspection of the mechanical components of the Motor Lorry’s braking and steering system appear to suggest that its braking and steering system was in serviceable condition at the material time of accident and there was no leakage found at the braking components and the steering components were found to be intact of the Motor Lorry.

18. The 6 tyres fitted on the Motor Lorry were also found 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 6 tyres. The 6 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 5.3mm – 8.2mm.

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