

Your Ref: TP/IP/01915/2021
Our Ref : CI/TPD21002932/P

7th April 2021

Fatal Accident Investigation Team

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

MECHANICAL INSPECTION REPORT OF MINI BUS PA 8287S

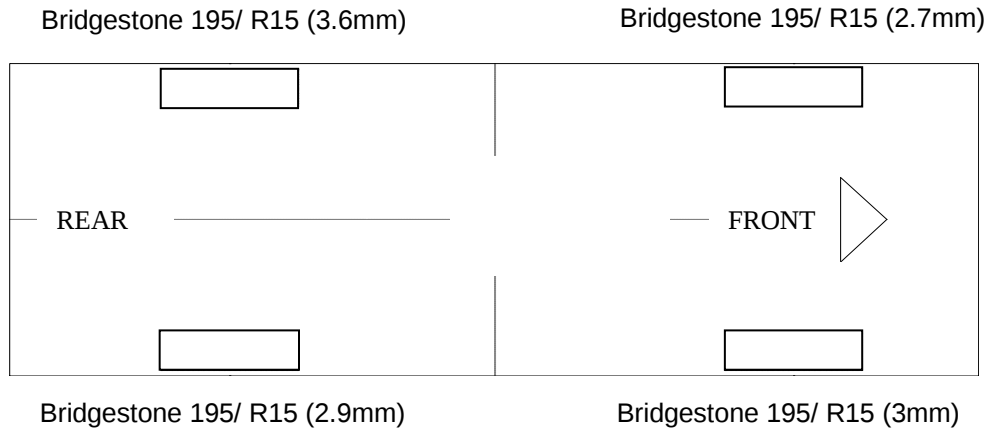
1. I refer to your request on 25th February 2021 to conduct a physical inspection of a Mini Bus bearing registration number PA 8287S (herein referred to as “**Mini Bus**”), which was involved in a road traffic accident on 11th January 2021
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Mini Bus that may have contributed to the accident.
3. Following the request, I had carried out a physical inspection of the Mini Bus on 5th April 2021 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 Mini Bus at the time of my inspection was not recorded as the engine was unable to be jumpstarted up despite multiple attempts in jumpstarting it.
5. The Mini Bus appeared to have sustained damage at its front portion. Its front windscreen, front body panel, front bumper and engine components were damaged at the time of my inspection as result of the accident.

Tyres and Wheel Rims

6. The 4 tyres of the Mini Bus 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 4 tyres. The tyre brand, tyre size and remaining tread depth of the 4 tyres of the Mini Bus were recorded as follows:-



7. The 4 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 11 below.



Photo 1 shows general view of the Mini Bus's rear portion at the time of my inspection. The Mini Bus rear portion was observed to be intact and unaffected by the accident.



Photo 2 shows a general view of the Mini Bus's frontal portion at the time of my inspection. The Mini Bus front portion was observed to have sustained damage at its front windscreen, front body panel, front bumper and engine components were damage at the time of my inspection as result of the accident.



Photo 3 shows a general view of the Mini Bus's frontal portion at the time of my inspection. The Mini Bus front portion was observed to have sustained damage at its front windscreen (circled) and front body panel (arrowed) at the time of my inspection as result of the accident.



Photo 4 shows a general view of the Mini Bus's frontal portion at the time of my inspection. The Mini Bus front portion was observed to have sustained damage at its front bumper (arrowed) at the time of my inspection as result of the accident.

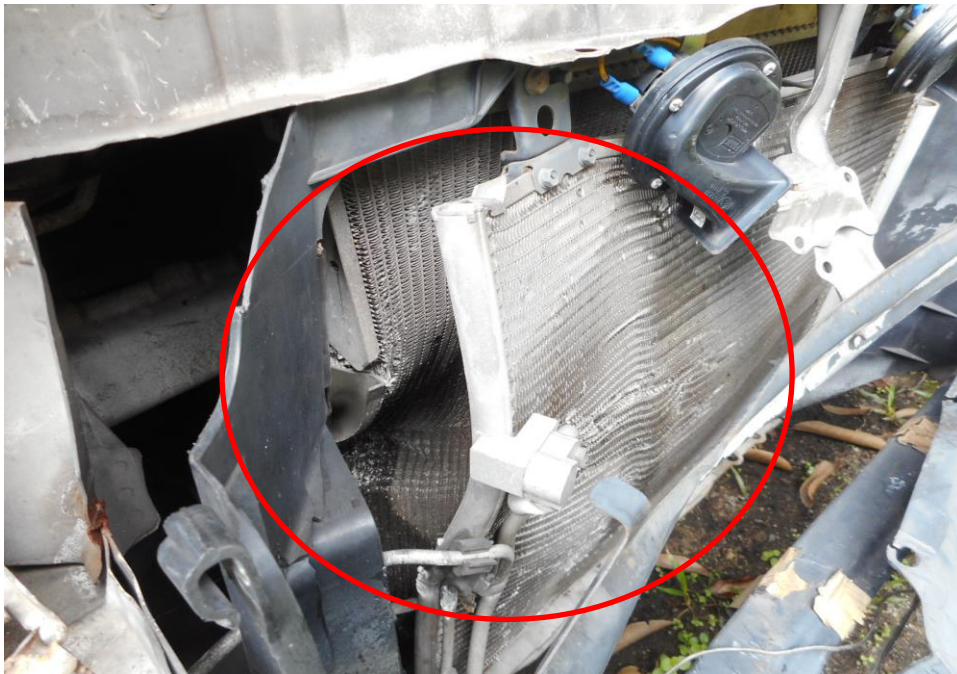


Photo 5 shows a general view of the Mini Bus's frontal portion at the time of my inspection. The Mini Bus front portion was observed to have sustained damage at its front engine radiator (circled) at the time of my inspection as result of the accident.

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Photo 6 shows general view of the Mini Bus's right portion at the time of my inspection. The Mini Bus was observed to be intact and unaffected by the accident.



Photo 7 shows a general view of the left body of the Mini Bus at the time of my inspection. The Mini Bus was observed to be intact and unaffected by the accident.



Photo 8 shows the condition of the front right tyre of the Mini Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 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 4 tyres that were fitted on the Mini Bus.

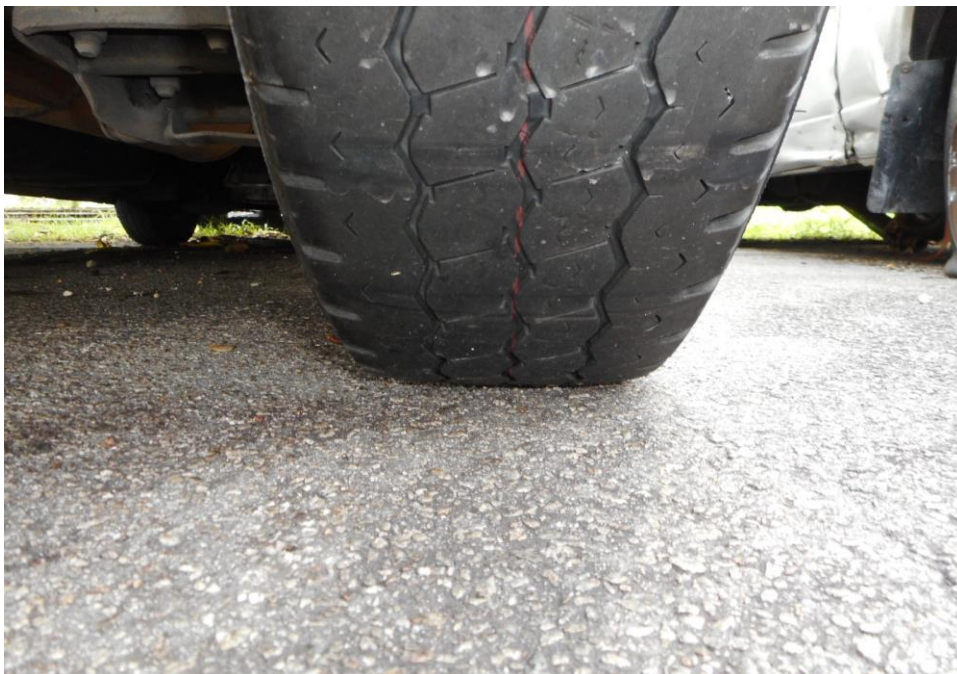


Photo 9 shows the condition of the rear right tyre of the Mini Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 2.9mm. The tyre, which was wrapped around standard steel wheel rim, it was observed to be sufficiently inflated for vehicular operation.



Photo 10 shows the condition of the rear left tyres of the Mini Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 3.6mm. 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 4 steel wheel rims of the Mini Bus.



Photo 11 shows the condition of the rear right tyres of the Mini Bus, which were observed to be in serviceable condition with remaining, tread depth of approximately 2.7mm. 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 that were fitted on the Mini Bus.

Engine Compartment & Operating Fluids

8. Upon examination of the Mini Bus'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, power steering fluid and engine oil were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids. However, the engine coolant was observed to be insufficient due to the damaged to the radiator that caused a leakage of engine coolant as a result of the accident.
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 Mini Bus.
10. My subsequent checks on the underside of the Mini Bus also revealed no fluid stain. Visually, the various undercarriage components of the Mini Bus were all observed to be intact and without any visible damage. See photo 12 – 17 below.



Photo 12 shows a general view of the Mini Bus's engine compartment, which was accessed by lifting the front cabin of the Mini Bus. 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 Mini Bus 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 Mini Bus at the time of my inspection. The engine coolant was observed to be insufficient level as the damaged sustained from the accident had caused a leakage of engine coolant from the radiator.



Photo 15 shows the engine oil dip stick of the Mini Bus at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.



Photo 16 shows the power steering fluid reservoir of the Mini Bus at the time of my inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination.



Photo 17 shows the undercarriage of the Mini Bus, 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 Mini Bus.

Steering System & Braking System

11. Static brake tests conducted on the Mini Bus 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 Mini Bus. The braking system of the Mini Bus 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. For this inspection, I was not able to conduct any tests on the steering system of the Mini Bus due to the Mini Bus running on power steering which requires the Mini Bus to be started and the engine was unable to be started up. (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 18 - 24 below.



Photo 18 shows the jumpstarting process of the Mini Bus's engine. The engine of the Mini Bus was unable to be jumpstarted up despite multiple attempts in starting it.



Photo 19 shows the various undercarriage components at the front right wheel of the Mini Bus, 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 Mini Bus 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 20 shows the various undercarriage components at the front left wheel of the Mini Bus, in particular the steering tie rod end (arrowed). The various undercarriage components of the Mini Bus 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.

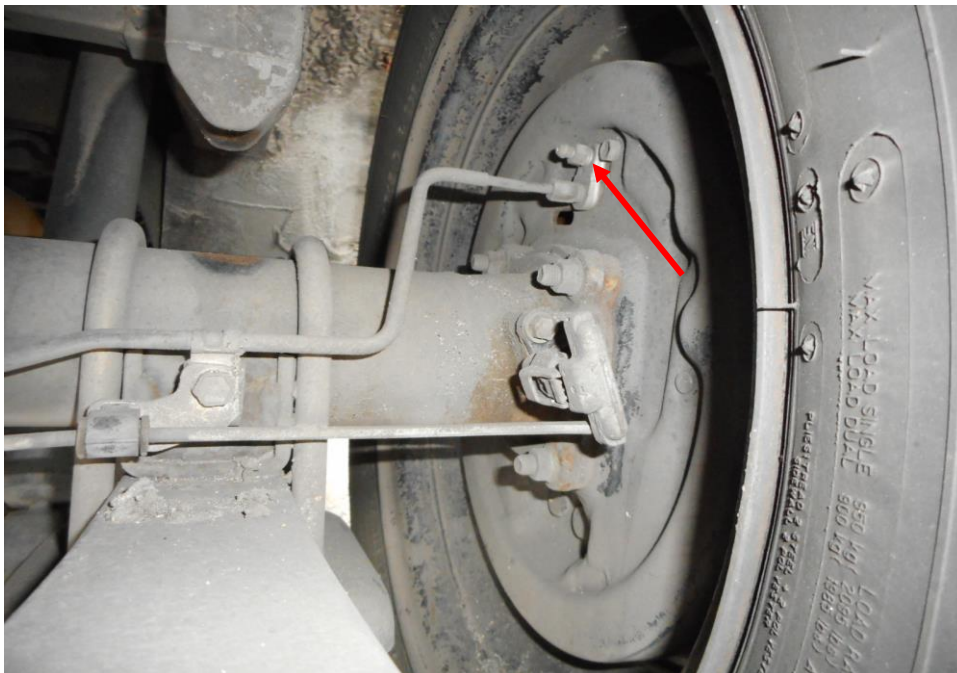


Photo 21 shows the brake pipe (arrowed) at the rear right wheel of the Mini Bus. I did not observe any leakage of brake fluid at the time of my inspection of the Mini Bus. My static tests of the Mini Bus's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Mini Bus was likely to be in serviceable condition at the material time of accident.



Photo 22 shows the brake pipe (arrowed) at the rear left wheel of the Mini Bus. I did not observe any leakage of brake fluid at the time of my inspection of the Mini Bus. My static tests of the Mini Bus'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 Mini Bus was likely to be in serviceable condition at the material time of accident.



Photo 23 shows the brake hose/pipe (arrowed) at the front right wheel of the Mini Bus. 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 24 shows the brake hose/pipe (arrowed) at the front left wheel of the Mini Bus. 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. Mini Bus's automatic self-test of the functionality of its various electronic operating systems was not able to be conducted as the engine system was unable to be jumpstarted up despite multiple attempts in jumpstarting it. (unable to be started)

Seat Belts

14. The front right and front left seat belts of the "Mini Bus" were tested and all the seat belts were able to be fastened securely into the respective pre-tensioners that were fitted at the sides of each seat.

Operational Behaviour of the Mini Bus

15. A short operational test to primarily determine whether there was any abnormality to the engine system, transmission system and braking system of the Mini Bus could not be conducted given the engine of the Mini Bus was unable to be started up.

Conclusion

16. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Mini Bus that may have contributed to the accident. Its engine not able to be started up 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 Mini Bus's braking system appear to suggest that its braking system was in serviceable condition at the material time of accident and there was no leakage found at the braking components of the Mini Bus.
18. The 4 tyres fitted on the Mini Bus 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 4 tyres. The 4 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 2.7mm – 3.6mm.



Sherwin Beh

Technical Investigator



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