

Your Ref: TP/IP/19473/2022  
Our Ref : CI/TPD22008177/P

8<sup>th</sup> September 2022

**General Investigation Team**

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

**MECHANICAL INSPECTION REPORT OF POLICE VAN GBB 7823L**

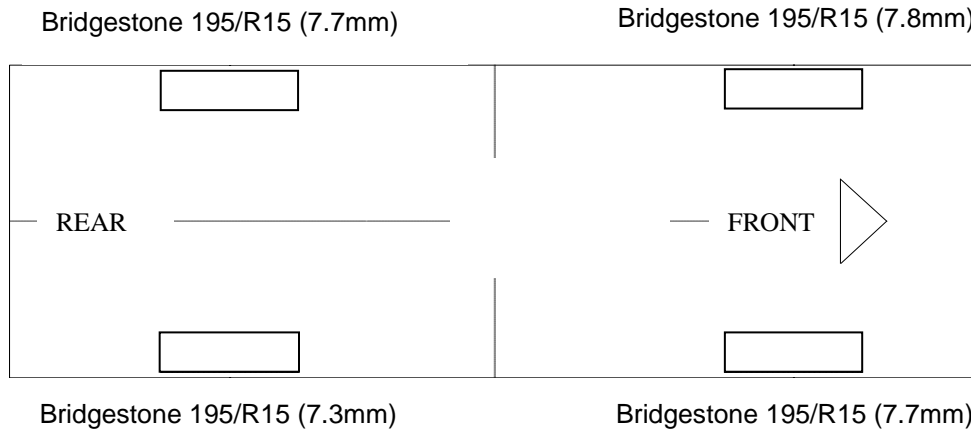
1. I refer to your request on 16<sup>th</sup> August 2022 to conduct a physical inspection of a Police Van bearing registration number GBB 7823L (herein referred to as "**Police Van**"), which was involved in a road traffic accident on 25<sup>th</sup> July 2022.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Police Van that may have contributed to the accident.
3. Following the request, I had carried out a physical inspection of the Police Van on 7<sup>th</sup> September 2022 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 Police Van at the time of my inspection was 102,650km.
5. The Police Van appeared to have sustained damage at its frontal portion. Its front body panel, front grille, front bumper, both front left headlamp and its front right door were observed to be damaged at the time of my inspection.

**Tyres and Wheel Rims**

6. The 4 tyres of the Police Van 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 Police Van 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 – 12 below.



**Photo 1** shows a general view of the instrument cluster of the Police Van at the time of my inspection. The mileage of the Police Van was 102,650km



**Photo 2** shows a general view of the Police Van's frontal portion at the time of my inspection. It appeared to have sustained damage at its frontal portion. Its front body panel, front grille, front bumper, both front left headlamp and its front right door were observed to be damaged at the time of my inspection.



**Photo 3** shows a close up view of the Police Van's frontal portion at the time of my inspection. It appeared to have sustained damage at its frontal portion. Its front grille (yellow circle), its front body panel (red circle) and front right headlamp (arrowed) was damaged at the time of my inspection as a result of the accident.



**Photo 4** shows a close up view of the Police Van's frontal portion at the time of my inspection. It appeared to have sustained damage at its frontal portion. Its front left headlamp (arrowed) and front bumper (circled) was damaged at the time of my inspection as a result of the accident.



**Photo 5** shows a general view of the right body of the Police Van at the time of my inspection. The front right door of the Police Van was observed to be damaged as a result of the accident.





**Photo 6** shows a close up view of the right body of the Police Van at the time of my inspection. The front right door (circled) of the Police Van was observed to be damaged as a result of the accident.



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



**Photo 8** shows a general view of the rear body of the Police Van at the time of my inspection. The Police Van was observed to be intact and unaffected by the accident.



**Photo 9** shows the condition of the front right tyre of the Police Van, which was observed to be in serviceable condition with remaining tread depth of approximately 7.7mm. 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 Police Van.



**Photo 10** shows the condition of the rear right tyre of the Police Van, which was observed to be in serviceable condition with remaining tread depth of approximately 7.3mm. The tyre, which was wrapped around standard steel wheel rim, it was observed to be sufficiently inflated for vehicular operation.



**Photo 11** shows the condition of the rear left tyres of the Police Van, which was observed to be in serviceable condition with remaining tread depth of approximately 7.7mm. 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 Police Van.





**Photo 12** shows the condition of the front left tyres of the Police Van, which was observed to be in serviceable condition with remaining tread depth of approximately 7.7mm. 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 Police Van.

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

8. Upon examination of the Police Van's engine compartment, I had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The engine coolant, 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 brake fluid was unable to be checked as the brake fluid reservoir was block by the damaged front right door which was not able to be opened due to the induct impact sustained from 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 Police Van.
10. My subsequent checks on the underside of the Police Van also revealed no fluid stain. Visually, the various undercarriage components of the Police Van were all observed to be intact and without any visible damage. See photo 13 – 17 below.





**Photo 13** shows a general view of the Police Van's engine compartment, which was accessed by lifting the front cabin of the Police Van. 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 14** shows the engine coolant of the Police Van at the time of my inspection. The engine coolant was observed to be of sufficient level and without any visible contamination.



**Photo 15** shows the engine oil dip stick of the Police Van 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 brake fluid reservoir of the Police Van at the time of my inspection. The brake fluid was unable to be observed as the front right door was damaged as a result of the accident and was unable to be opened, blocking the viewing of the brake fluid reservoir (arrowed).



**Photo 17** shows the undercarriage of the Police Van, 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 Police Van.

### **Steering System & Braking System**

11. Static brake tests conducted on the Police 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 Police Van. The braking system of the Police Van was likely to be in serviceable condition at the material time. There was no sign(s) of brake fluid leakage along the brake hoses and brake pipes. However, we are unable to view the brake fluid reservoir and its brake fluid level due to the damaged front right door as a result of the accident.
12. Static test on the steering system of the Police Van also revealed abnormality to the steering system. I have experienced abnormal resistance when turning the steering wheel left and right to full lock positions. 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. However, the steering column box was observed to be damaged as a result of the impact sustained from the accident. See photo 18 - 26 below.





**Photo 18** shows the various undercarriage components at the front right wheel of the Police Van, in particular the steering tie rod end (red arrow). The various steering components were all found to be intact. 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 Police Van, in particular the steering tie rod end (red arrow). The various steering components were all found to be intact. There was also no sign of fluid stain(s) observed on the various undercarriage components.

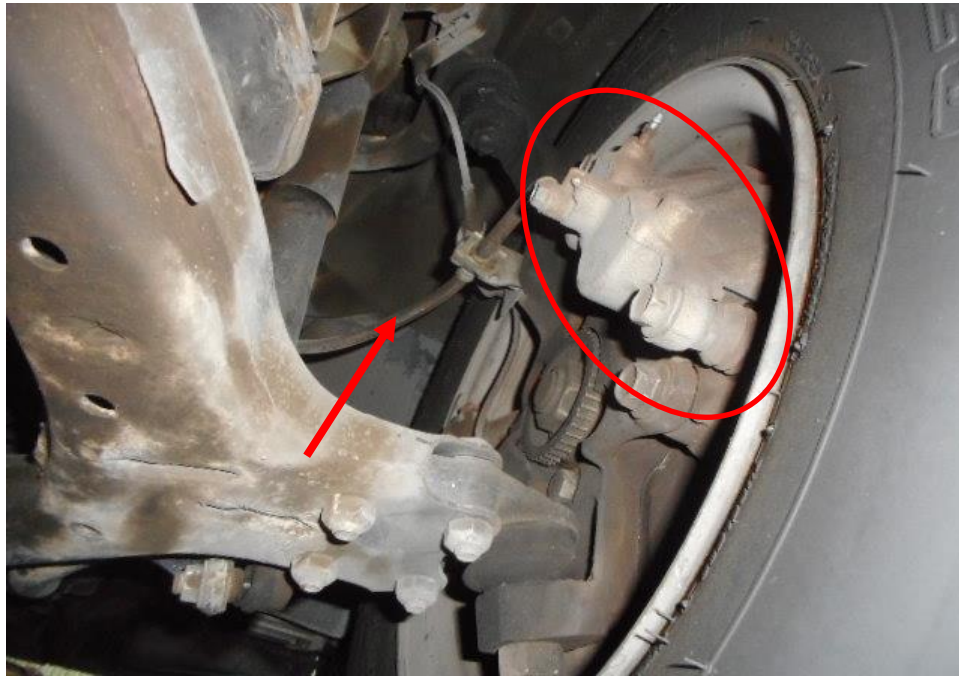


**Photo 20** shows the brake pipe (arrowed) at the rear right wheel of the Police Van. I did not observe any leakage of brake fluid at the time of my inspection of the Police Van. My static tests of the Police Van's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Police Van was likely to be in serviceable condition at the material time of accident.

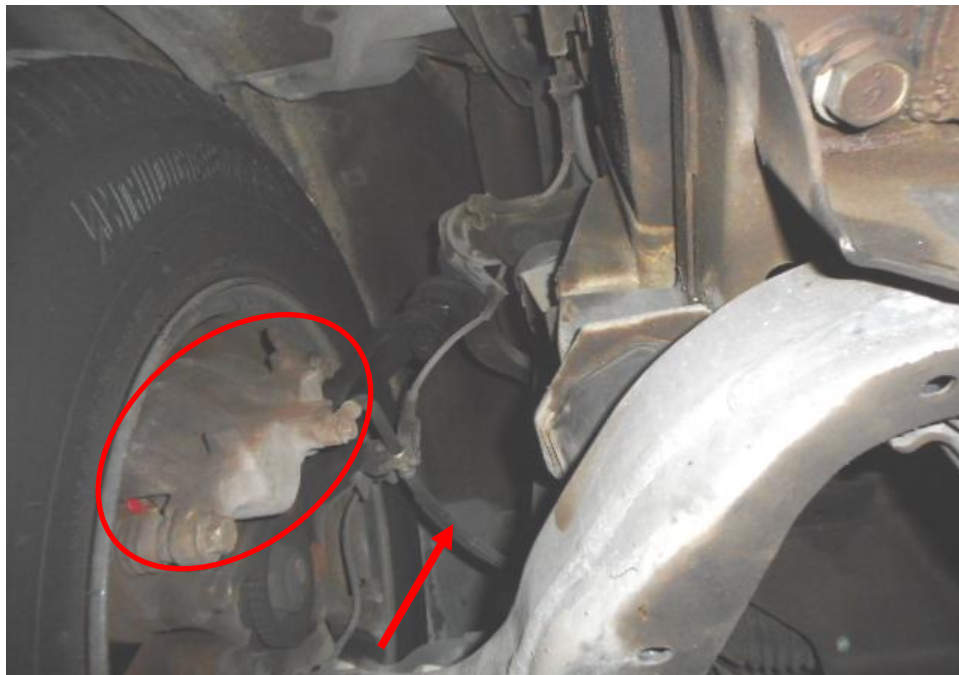


**Photo 21** shows the brake pipe (arrowed) at the rear left wheel of the Police Van. I did not observe any leakage of brake fluid at the time of my inspection of the Police Van. My static tests of the Police Van's braking system, along with my visual examination of the various mechanical components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





**Photo 22** shows the brake hose/pipe (arrowed) at the front right wheel of the Police Van. 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.

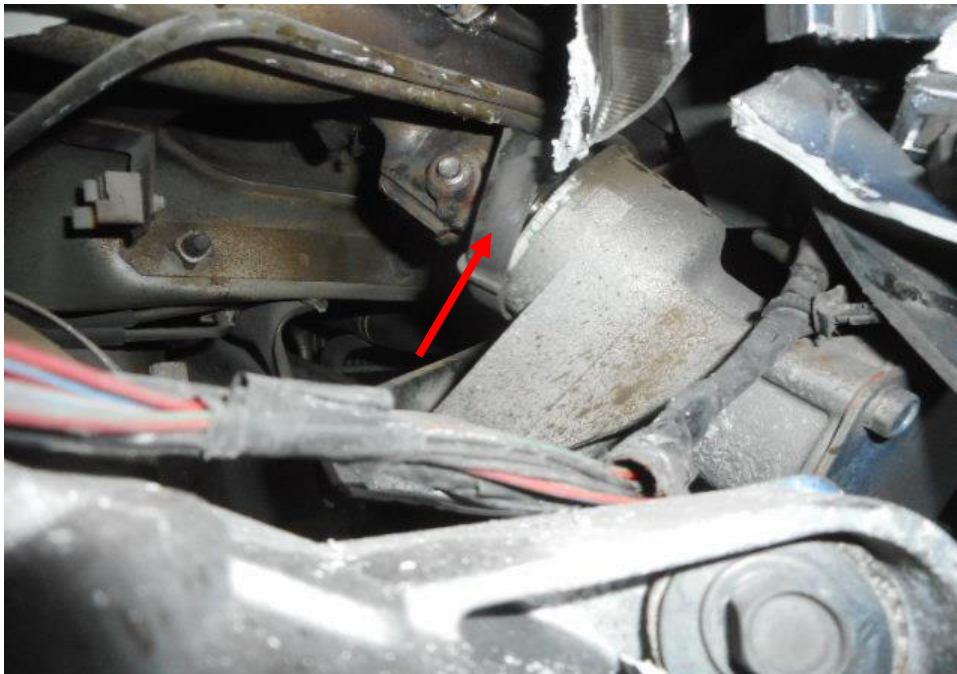


**Photo 23** shows the brake hose/pipe (arrowed) at the front left wheel of the Police Van. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without 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 general view of the steering column box (arrowed) at the front portion of the Police Van, it was observed to be damaged as a result of the impact sustained from the accident.



**Photo 25** shows the close up view of the steering column box (arrowed) at the front portion of the Police Van, it was observed to be damaged as a result of the impact sustained from the accident.



**Photo 26** shows the position of the Police Van that had moved forward. During my braking system test, 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 Police Van. The braking system of the Police Van was likely to be in serviceable condition at the material time.

### **Electronic Safety / Warning Indicators**

13. Police Van's automatic self-test of the functionality of its electronic operating systems like the Anti-Lock Braking System (ABS) during cranking of the engine had indicated that the system 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 27 & 28 below.



**Photo 27** shows the warning light for Anti-Lock Braking System (ABS) (arrowed) appearing on the instrument panel of the Police Van during the self-test of its various electronic operating systems when its engine was cranked.



**Photo 28** shows no warning lights illuminated on the instrument panel of the Police Van after the engine was cranked. This would suggest that there was no abnormality to the electronic operating system of the Police Van, like the ABS, and etc.



### **Operational Behaviour of the Police Van**

14. A operational test to the Police Van, to primarily determine whether there was any abnormality to its various operating systems like its engine system, its transmission system and braking system subsequently carried out. The test was conducted by driving the Police Van forward, stopping, before reversing and coming to a stop again. However the operational test to the steering system was unable to be conducted given the extent of damage that it had sustained to its steering column box had prevented me from carrying out any operational test to it.
15. During the operational test, the various transmission gears of the Police Van were able to be engage without any difficulty and manually shifting the gear lever. There were no abnormal sounds heard and/or abnormal behaviour of the Police 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 Police Van was able to slow down and come to a complete stop upon depressing of the brake pedal. However, only the operational test to the steering system was unable to be conduct due to the damage it had sustained from the accident. Refer to photo 2 & 26

### **Conclusion**

16. From this particular case, I was unable to determine whether there was any possible mechanical failure to the Police Van that may have contributed to the accident. The extent of damage that it had sustained had prevented me from carrying out any operational test to the steering system.
17. However, static brake and operational test was able to be conducted and in general our visual inspection of the mechanical components of the Police Van'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 Police Van.

18. The 4 tyres fitted on the Police Van 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 7.3mm – 7.8mm.

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