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Our Ref : CI/TPD19012735/N

11 July 2019

Fatal Accident Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTORCYCLE FBD 2381S

1. We refer to your request on 20 June 2019 to conduct a physical inspection of a motorcycle bearing registration number FBD 2381S (herein referred to as "**Motorcycle**"), which was involved in a fatal road traffic accident on 21 April 2019.
2. The objective of the inspection is to determine if there was any possible mechanical failure to the Motorcycle that may have contributed to the accident.
3. Following the request, we had carried out a physical inspection of the Motorcycle on 5 July 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.

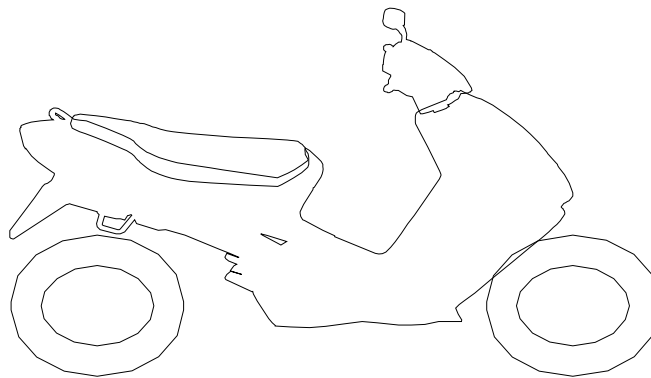
General Condition

4. The mileage of the Motorcycle at the time of our inspection was 56, 472km.
5. The Motorcycle had sustained damages at its frontal portion and left body. Body parts that were found to have been damaged include its headlamp assembly, front fork assembly, wheel rims, side mirrors, clutch lever, fuel tank, left side cover, gear shift pedal, seat and top box bracket, amongst others.

Tyres and Wheel Rims

6. We did not observe any tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the rear tyre. However we did observe that the rear tyre was deflated.

7. We also observed a cut/tear on the tread area of the front tyre that had penetrated into the core of the tyre resulting in the front tyre to be punctured. The lines of the cut/tear were noted to be of a clean slicing type, suggesting that the cut/tear was by a sharp edge object. This would then indicate that the cut/tear of the Motorcycle's front tyre was a result of the accident and did not occur prior to the accident.
8. The tyre brand, tyre size and remaining tread depth of the 2 tyres of the Motorcycle were recorded as follows:-



FKR 90/90 - 18 (5mm)
(Deflated)

FKR 80/90 - 18 (3mm)
(Deflated)

9. The 2 tyres were wrapped around alloy wheel rims. At the time of our inspection, we observed that both wheel rims were bent. See photos 1 – 18 below.



Photo 1 shows a general view of the rear body of the Motorcycle at the time of our inspection. The Motorcycle had sustained damages at its frontal portion and left body.



Photo 2 shows a general view of the left body of the Motorcycle at the time of our inspection. Body parts that were found to have been damaged include its headlamp assembly, front fork assembly, wheel rims, side mirrors, clutch lever, fuel tank, left side cover, gear shift pedal, seat and top box bracket, amongst others.



Photo 3 shows the damaged speedometer gauge of the Motorcycle. The mileage of the Motorcycle at the time of our inspection was 56, 472km (circled).



Photo 4 shows a general view of the front body of the Motorcycle at the time of our inspection. Body parts that were found to have been damaged include its headlamp assembly, fork assembly and speedometer gauge amongst others.

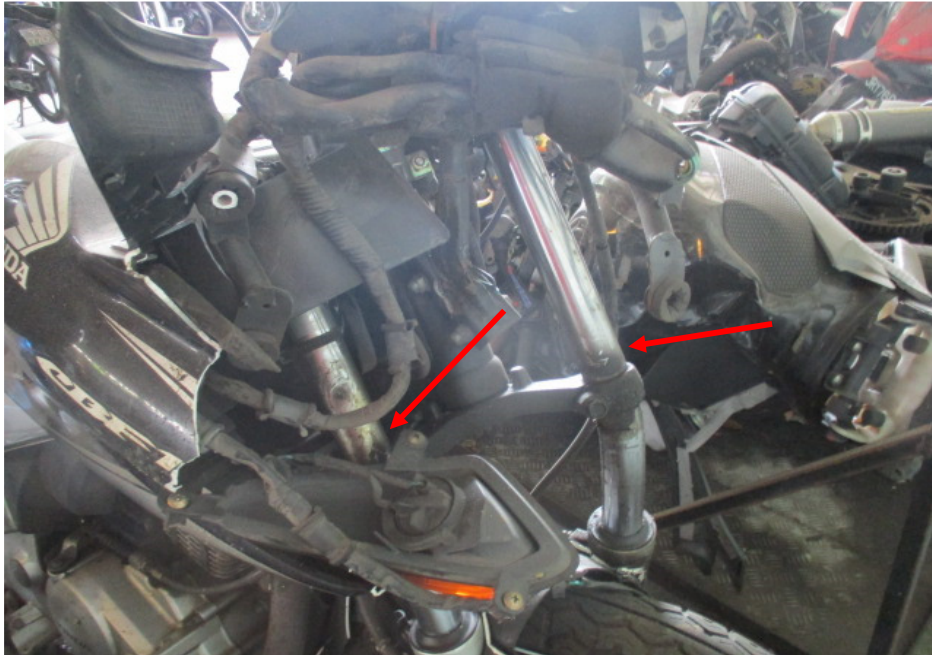


Photo 5 shows a closer view of the front forks (arrowed) which were amongst the body parts at the front body of the Motorcycle that had sustained damage as a result of the accident.



Photo 6 shows a closer view of the front mudguard (arrowed) which was amongst the body parts at the front body of the Motorcycle that had sustained damage as a result of the accident.



Photo 7 shows a closer view of the side mirrors, clutch lever, front brake lever, handlebars, handlebar grips and handlebar ends of the Motorcycle. These parts were amongst the body parts of the Motorcycle which were damaged as a result of the accident.



Photo 8 shows a closer view of the dented petrol tank, which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.



Photo 9 shows a closer view of the torn seat, which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.



Photo 10 shows a closer view of the left side cover, which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.



Photo 11 shows a closer view of the gear shift pedal and left front footrest which were amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.



Photo 12 shows a closer view of the left pillion footrest which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident (circled).



Photo 13 shows the top box bracket of the Motorcycle which had broken off as a result of the accident (arrowed).



Photo 14 shows the front tyre of the Motorcycle at the time of our inspection. The pattern of the tread was clearly visible with remaining tread depth of approximately 3mm. We had observed a cut/tear on the tread area of this tyre (circled), which had penetrated into the core of the tyre resulting in the front tyre to be punctured.



Photo 15 shows a close up view of the cut/tear on the front tyre of the Motorcycle (circled). The lines of the cut/tear were noted to be of a clean slicing type, suggesting that the cut/tear was by a sharp edge object. This would then indicate that the cut/tear of the Motorcycle's front tyre was a result of the accident and did not occur prior to the accident.



Photo 16 shows the bent front wheel rim of the Motorcycle at the time of our inspection (arrowed).



Photo 17 shows the condition of the Motorcycle's rear tyre. The pattern of the tread was clearly visible with remaining tread depth of approximately 5mm. We did not observe any tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the rear tyre. However we did observe that the rear tyre was deflated.



Photo 18 shows the deflated rear tyre (arrowed) and the bent rear wheel rim (circled) of the Motorcycle at the time of our inspection.

Engine & Drive Train

10. Upon examination of the Motorcycle's engine area, we had observed that the various engine related parts and components were intact with no visible damage. There was also no sign(s) or indication(s) of fluid leak observed around the engine area of the Motorcycle.
11. The gear chain of the Motorcycle was found to be intact without any misalignment. It was also adequately lubricated for operating purposes. See photos 19 – 22 below.

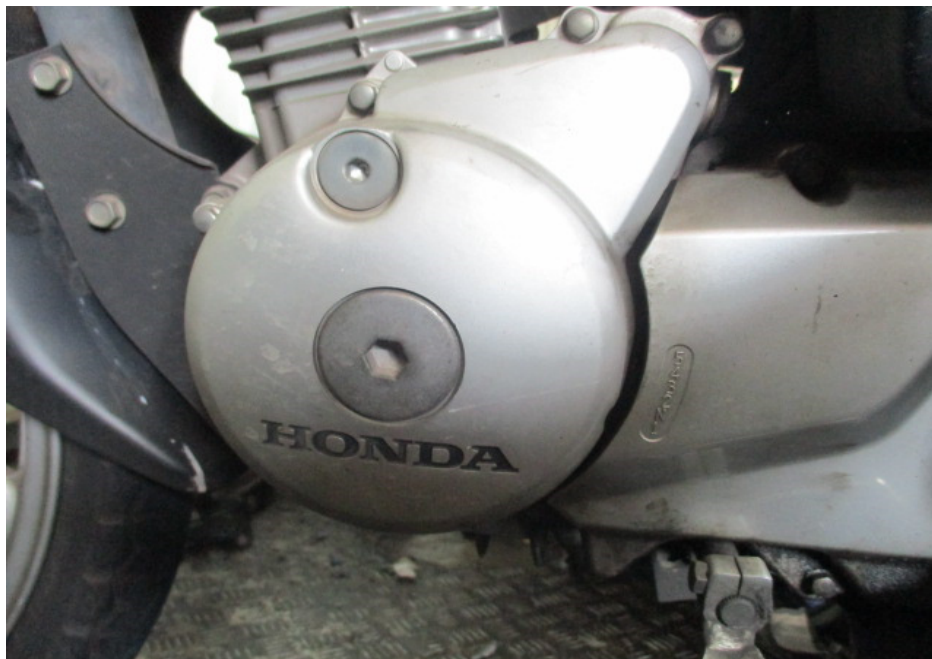


Photo 19 shows the left side of the engine of the Motorcycle at the time of our inspection. The various engine related parts and components were found to be intact with no visible damage. There was also no sign(s) or indication(s) of fluid leak observed around the left engine area of the Motorcycle.



Photo 20 shows the right side of the engine of the Motorcycle at the time of our inspection. The various engine related parts and components were found to be intact with no visible damage. There was also no sign(s) or indication(s) of fluid leak observed around the right engine area of the Motorcycle.



Photo 21 shows the gear chain (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes. The gear chain rotates the rear wheel of the Motorcycle.



Photo 22 shows the closer view of the gear chain (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes.

Steering System & Braking System

12. For this case, we were not able to conduct any test(s) on the steering system of the Motorcycle due to the damage of its front fork. The front fork was found to be bent inwards as a result of the accident.
13. The brake system of the Motorcycle was of a semi-hydraulic type, where hydraulic (brake fluid) pressure controls the brake for the front wheel while the brake for the rear wheel is controlled by mechanical means (cables and springs). Our visual examination of the various components in the brake system, like the brake disc, brake caliper, drum, brake lever and brake foot pedal, revealed all to be intact and without damage. There was also no visible tear or cut observed on the connecting cables. The brake fluid for the front brake was also found to be of sufficiently level and without any contamination.
14. Static brake tests conducted on the Motorcycle had appear to indicate that the braking system of the Motorcycle was in serviceable condition. There was some resistance felt (spongy like feel) upon pressing the brake lever. This would indicate that there was no leakage of pressure/vacuum in the brake system.

15. For this case, we were not able to carry out any operational tests to the steering system and braking system of the Motorcycle due to the damage of its front fork, which had rendered the Motorcycle immobile for the operational tests. We were not able to push the motorcycle manually forward and backward, simulating movement of the Motorcycle, for the operational tests. See photos 23 – 27 below.



Photo 23 shows the front left fork of the Motorcycle. The front left fork (arrowed) was observed to be dislodged as a result of the accident. We were hence not able to conduct any tests on the steering system of the Motorcycle.

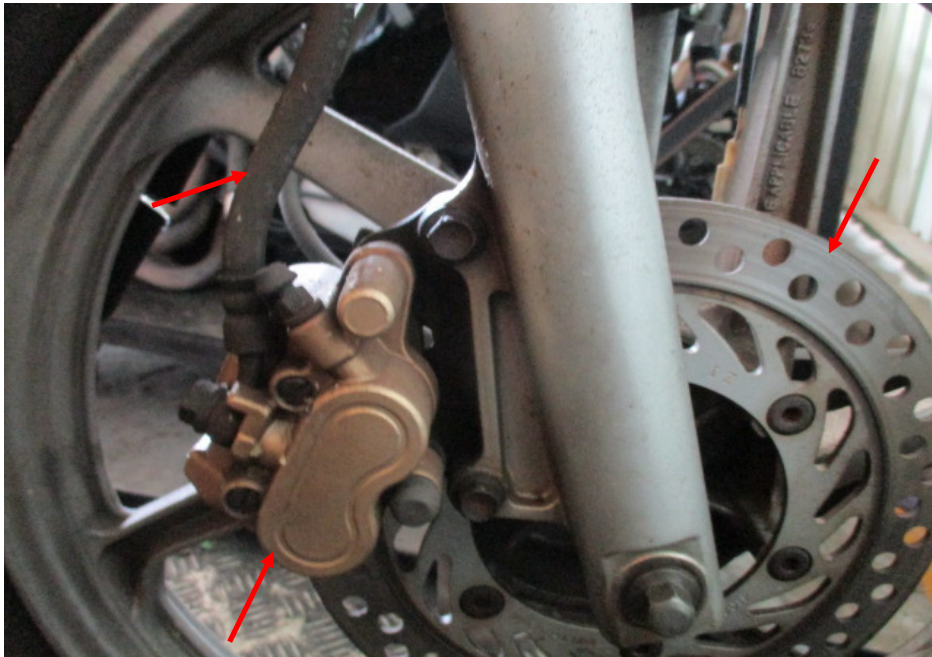


Photo 24 shows a close up view of the front brake caliper, front brake disc and front brake hose (arrowed) of the Motorcycle, which are all part of the components in the hydraulic front brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.



Photo 25 shows the brake fluid reservoir for the front brake of the Motorcycle. The brake fluid was observed to be without contamination and of sufficient level for operational purposes.

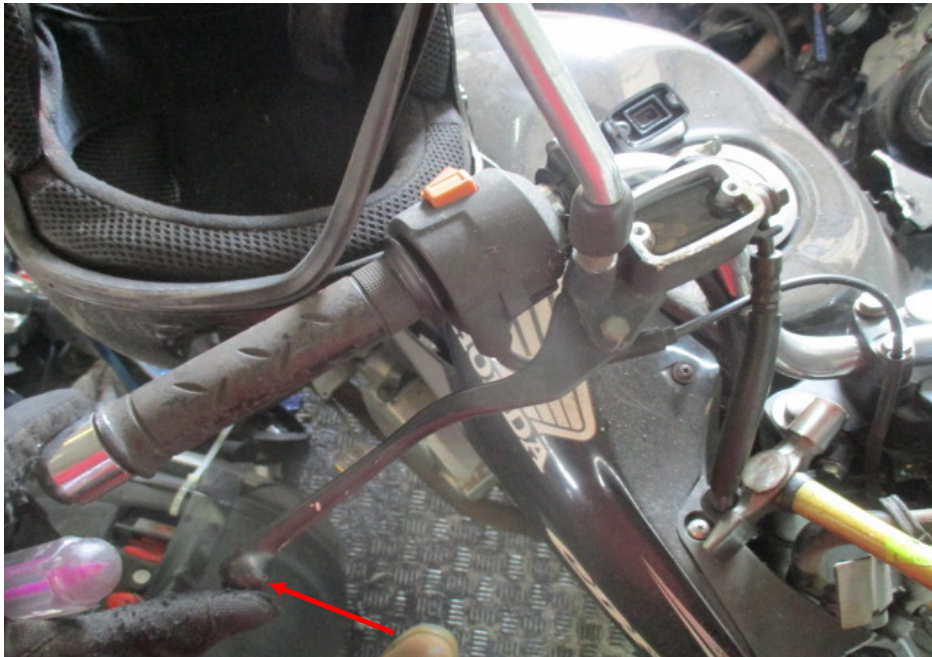


Photo 26 shows the front brake lever being depressed. There was some resistance felt (spongy like feel) upon pressing the front brake lever (arrowed). This would indicate that there is no leakage of pressure/vacuum in the brake system.



Photo 27 shows the rear wheel of the Motorcycle. The type of brake system for the rear wheel was of a mechanical type, controlled by the brake foot pedal of the Motorcycle. Our checks of the cable (arrowed), spring and drum which are all part of the components in the rear brake system of the Motorcycle reveal all to be intact and without damage.

Conclusion

16. For this particular case, we were unable to determine whether there was any possible mechanical failure to the Motorcycle that may have contributed to the accident. This was mainly due to the extent of damage that it had sustained. Its steering system and braking system were all damaged as a result of the accident.
17. The 2 tyres of the Motorcycle were found to be in serviceable condition with remaining tread depth of approximately 3mm and 5mm each. This had included the front tyre where a cut/tear on its tread area was observed. This cut/tear was a result of the accident which caused the front tyre to be punctured.

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