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Your Ref: TP/IP/12177/2019 29 May 2019
Our Ref : CI/TPD19008280/N

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

INSPECTION REPORT OF MOTORCYCLE FBG 3724P

1. We refer to your request dated 29 April 2019 to conduct a physical inspection of a motorcycle bearing registration number FBG 3724P herein referred to as "**Motorcycle**"), which was involved in a fatal road traffic accident on 1 March 2019.

2. The purpose of this inspection is to primarily 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 24 May 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

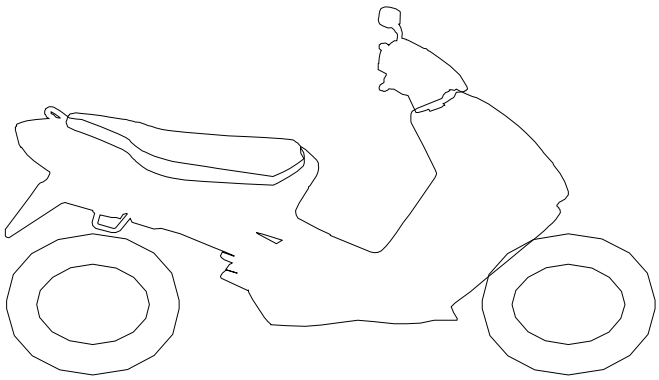
4. The mileage of the Motorcycle at the time of our inspection was not recorded due to a flat battery.

5. The Motorcycle was observed to have sustained damages along its front and left side. The body parts that were found to have been damaged include its front mudguard, left side cowling, left side mirror, clutch lever, left front footrest, left rear signal lamp and rear number plate, amongst others.

Tyres and Wheel Rims

6. The condition of the 2 tyres of the Motorcycle was observed to be in serviceable condition. 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 2 tyres. Both the tyres were observed to be sufficiently inflated for vehicular operation.

7. The tyre brand, tyre size and remaining tread depth of the 2 tyres were recorded as follows:-



Golden Boy 3.00 - 16 (8mm)

Golden Boy 2.75 - 19 (5mm)

8. The 2 tyres were wrapped around alloy wheel rims. At the time of our inspection, we did not observe any visible damage on the front and rear wheel rim of the Motorcycle. See photos 1 – 11 below.

Photo 1 shows a general view of the front body of the Motorcycle at the time of our inspection. The Motorcycle was observed to have sustained damages along its front and left side. The mileage of the Motorcycle at the time of our inspection was not recorded due to a flat battery.

Photo 2 shows a general view of the right front body of the Motorcycle at the time of our inspection. The Motorcycle was observed to have sustained damages along its front and left side. The body parts that were found to have been damaged include its front mudguard, left side cowling, left side mirror, clutch lever, left front footrest, left rear signal lamp and rear number plate, amongst others.

Photo 3 shows a closer view of the front mudguard (circled) which was amongst the body parts at the front body of the Motorcycle that had sustained damage as a result of the accident.

Photo 4 shows a closer view of the clutch lever, left side mirror and left handlebar end (arrowed) which were amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 5 shows the left side cowling of the Motorcycle (circled) that had sustained damage as a result of the accident.

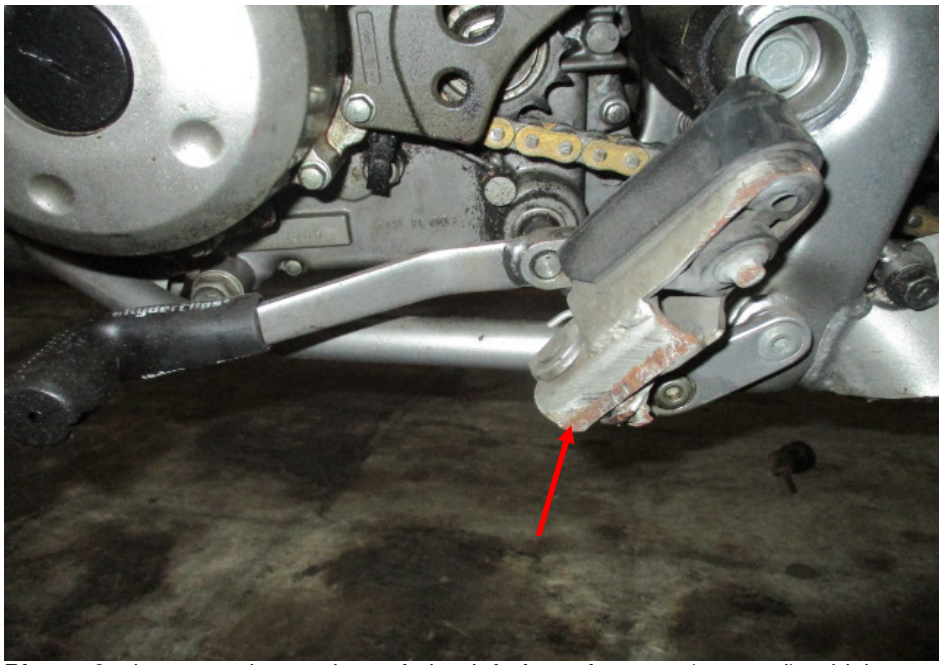


Photo 6 shows a closer view of the left front footrest (arrowed) which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 7 shows a closer view of the left rear side cover (arrowed) which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

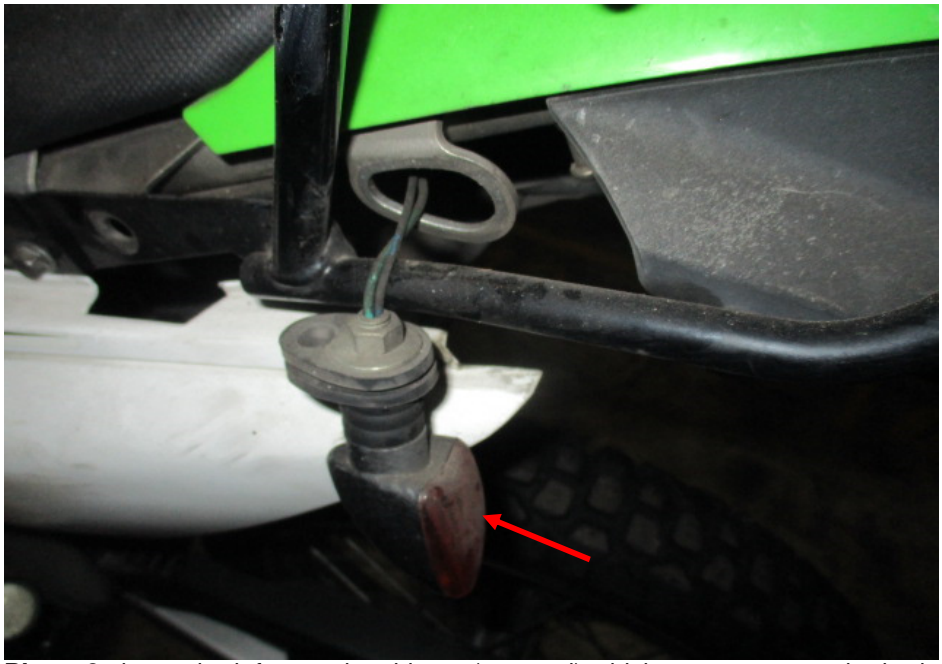


Photo 8 shows the left rear signal lamp (arrowed) which were amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 9 shows a closer view of the rear number plate (arrowed) which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 10 shows the front tyre of the Motorcycle at the time of our inspection The front tyre was observed to be in serviceable condition with remaining tread depth of approximately 5mm.The pattern of the tread was also clearly visible. There was no tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the front tyre.

Photo 11 shows the condition of the Motorcycle's rear tyre. The rear tyre was observed to be in serviceable condition with remaining tread depth of approximately 8mm. The tyre was also observed to be sufficiently inflated for vehicular operation. 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.

Engine & Drive Train

9. Upon examination of the engine area of the Motorcycle, we had observed that the various engine related parts and components on the right side of the Motorcycle were intact with no visible damage. There was also no fluid leak and/or fluid stain found around the right engine area of the Motorcycle. The various left engine components had sustained damage of grazing nature as a result of the accident however the engine components were still intact. There was also no fluid leak and/or fluid stain found around the left engine area of the Motorcycle.

10. The gear chain of the motorcycle was found to be intact without any misalignment. It was also adequately lubricated for operating purposes. See photos 12 – 15 below.

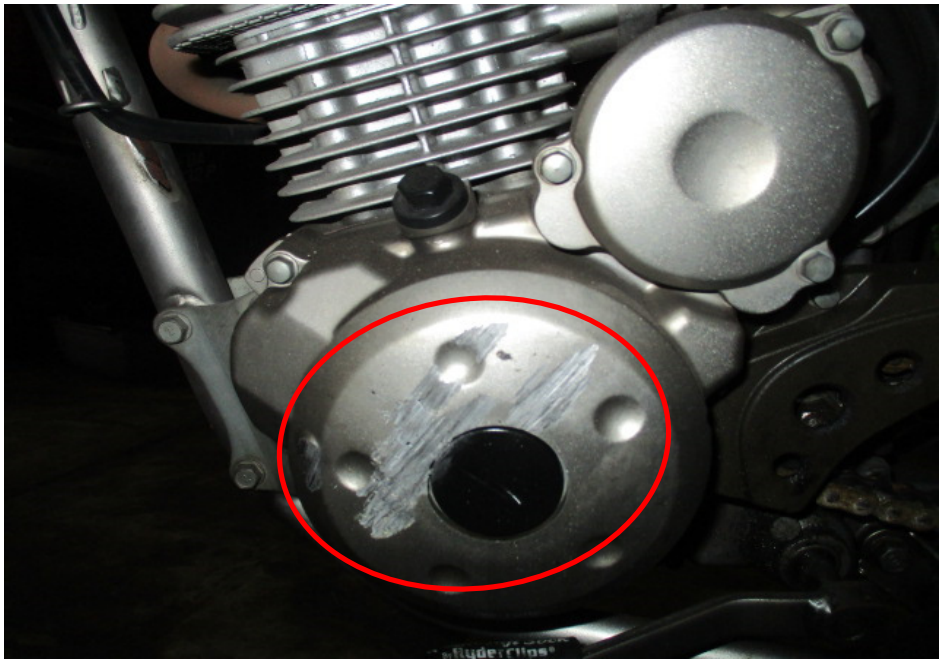


Photo 12 shows the left side of the engine of the Motorcycle at the time of our inspection. The various left engine components had sustained damage of grazing nature as a result of the accident (circled) however the engine components were still intact. There was also no fluid leak and/or fluid stain found around the left engine area of the Motorcycle.

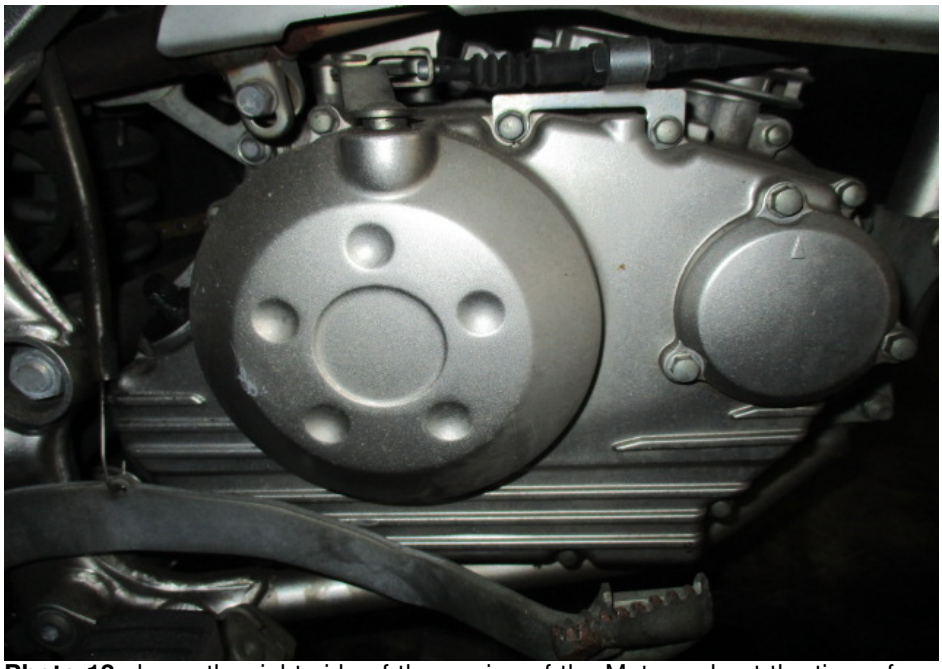


Photo 13 shows the right side of the engine of the Motorcycle at the time of our inspection. The various engine related parts and components were found to be intact with no visible damage. There was also no sign(s) or indication(s) of fluid leak observed around the right engine area of the Motorcycle.

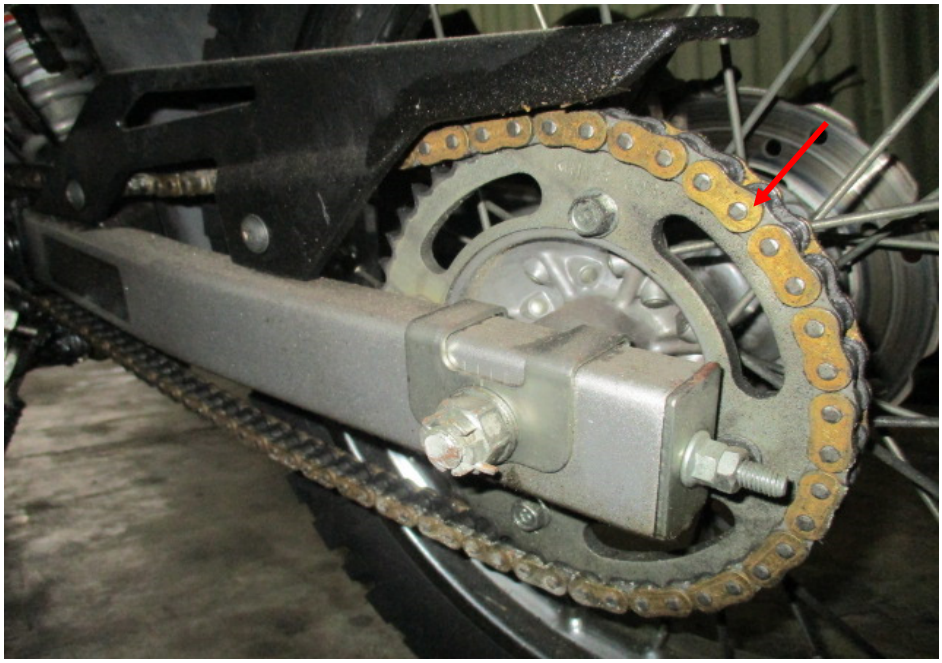


Photo 14 shows the general view of the gear train (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes.

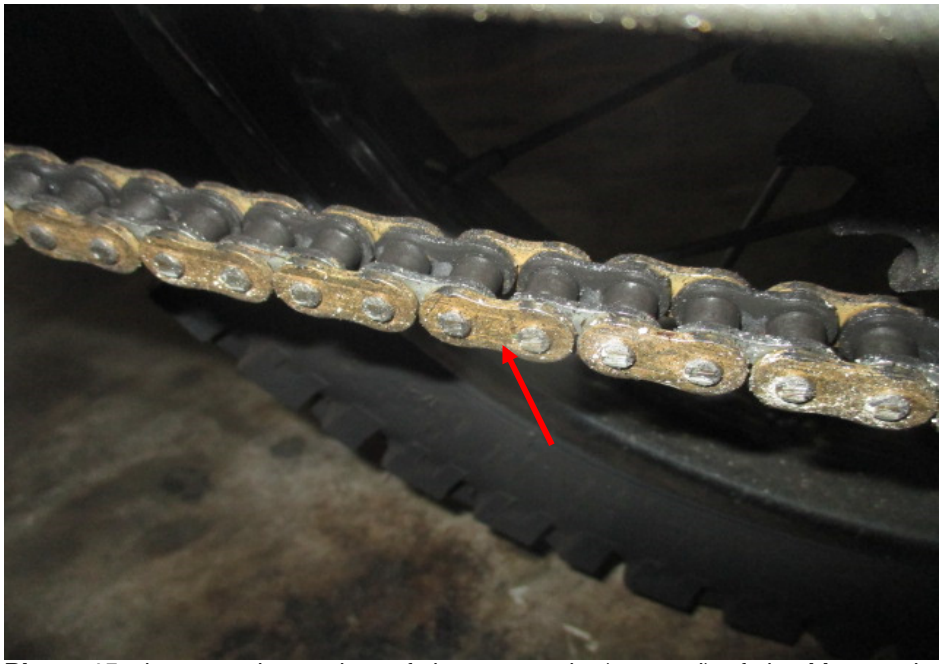


Photo 15 shows a closer view of the gear train (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes.

Steering System & Braking System

11. Our checks on the various steering components of the Motorcycle revealed that its steering system was in serviceable condition. Its front fork was found to be intact and undamaged. Turning the handle bar towards the left and right also did not produce any abnormal free play and/or resistance.

12. The braking system of the Motorcycle was observed to be of a full hydraulic type, where hydraulic (brake fluid) pressure controls the brake for the front wheel and rear wheel. The brake for the front wheel is engaged by pressing the brake lever at the right side of the Motorcycle's handle bar while the brake for the rear wheel is engaged by stepping on the brake pedal at the right side foot rest of the Motorcycle.

13. Our visual examination of the various components in the Motorcycle's rear braking system like the brake disc, brake caliper, brake foot pedal and brake hose revealed all to be intact and without damage. The brake fluid for the rear brake was also found to be of sufficient level and without any contamination. There was no leakage of brake fluid observed along the brake hose. This was from the respective brake fluid reservoir to the rear brake caliper of the Motorcycle.

14. However a leakage of brake fluid from the front brake fluid reservoir was observed when the front brake lever was depressed. The leakage of brake fluid from the front brake fluid reservoir could have been due to the accident as the front brake fluid reservoir was found to be bent inwards causing a crack to the front brake fluid reservoir. The front brake reservoir was also found to be corroded.

15. Static brake tests conducted on the Motorcycle had appear to indicate that the rear brake system of the Motorcycle was in serviceable condition. There was some resistance felt (spongy like feel) upon pressing the brake pedal. This would indicate that there no leakage of pressure/vacuum in the brake system.

16. We subsequently carried out an operational test of the Motorcycle's braking system. This was done by manually pushing the Motorcycle forward and backward, simulating the Motorcycle in motion, and thereafter engaging the front brake and rear brake of the Motorcycle. At the end of the short operational test, we did not observe any abnormal behaviour of the Motorcycle's rear braking system. The rear wheel of the Motorcycle was able to stop rotating immediately upon stepping on the brake pedal. However the front wheel of the Motorcycle was unable to stop rotating upon pressing the front brake lever due to pressure leak when the front brake lever was depressed (refer to paragraph 14 above).

17. In general, the observations gathered during the brake test had indicated that the rear braking system of the Motorcycle was in serviceable condition. See photos 16 – 23 below.

Photo 16 shows the front fork (arrowed) of the Motorcycle. The front fork and fork bracket of the Motorcycle were both found to be intact and undamaged. Turning the Motorcycle's handle bar towards the left and right did not produce any abnormal free play and/or resistance. The steering system of the Motorcycle was in serviceable condition at the time of our inspection.

Photo 17 shows the front wheel of the Motorcycle turned towards its full right. Turning the Motorcycle's handle bar towards the left and right did not produce any abnormal free play and/or resistance. This would indicate that the steering system of the Motorcycle was in serviceable condition at the time of our inspection.

Photo 18 shows the front wheel of the Motorcycle turned towards its full left. Turning the Motorcycle's handle bar towards the left and right did not produce any abnormal free play and/or resistance. This would indicate that the steering system of the Motorcycle was in serviceable condition at the time of our inspection.

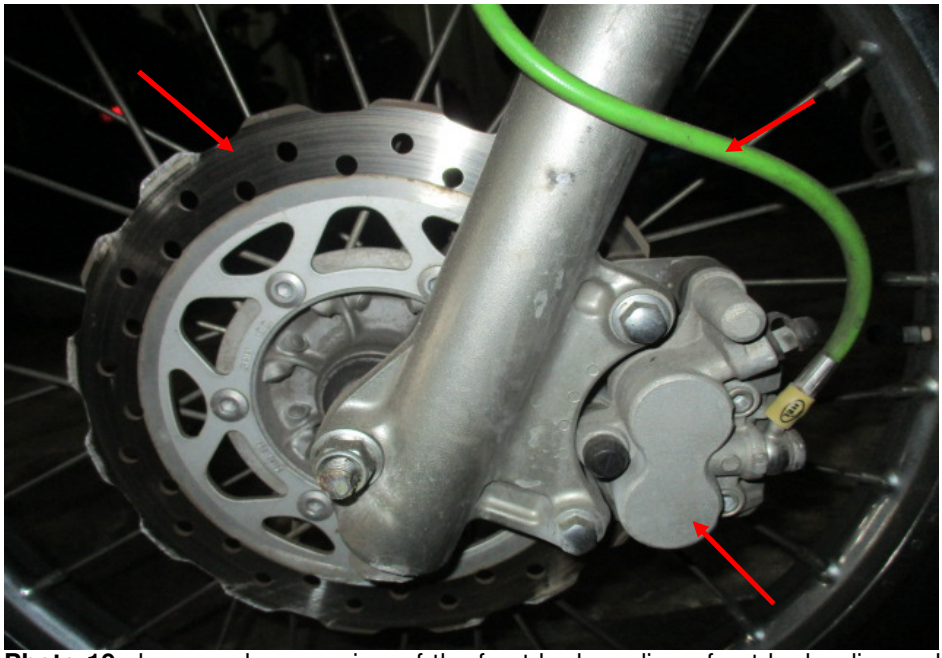


Photo 19 shows a close up view of the front brake caliper, front brake disc and front brake hose (arrowed) of the Motorcycle, which are all part of the components in the hydraulic front brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.

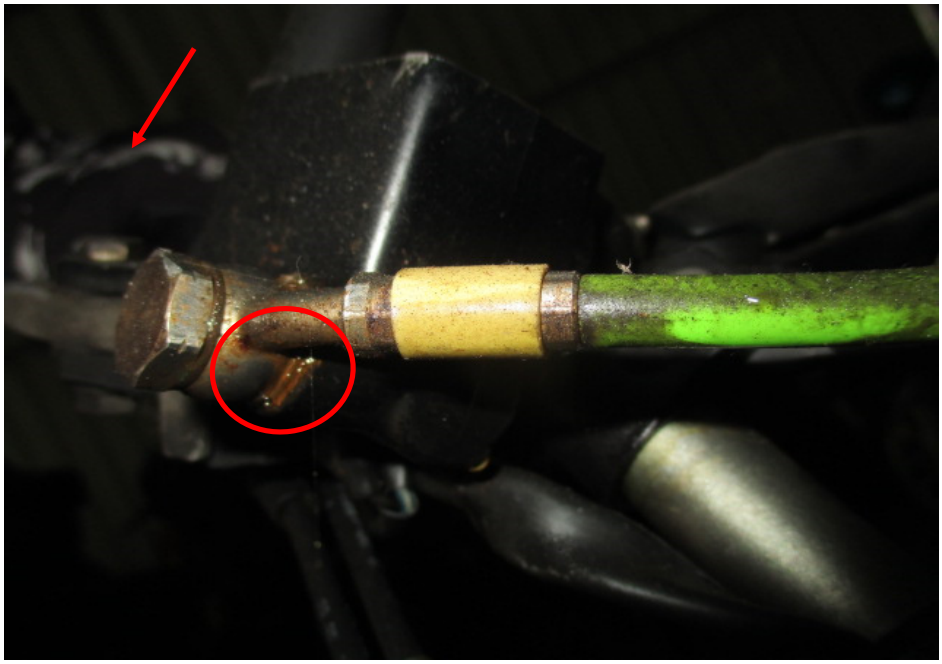


Photo 20 shows the brake fluid reservoir for the front brake of the Motorcycle. A leakage of brake fluid from the front brake fluid reservoir was observed (circled) when the front brake lever was depressed (arrowed).

Photo 21 shows the front brake lever being depressed. There was no resistance felt (spongy like feel) upon pressing the front brake lever (arrowed). This would indicate that there is leakage of pressure/vacuum in the brake system.

Photo 22 shows the brake fluid reservoir for the front brake of the Motorcycle. The brake fluid was observed to be of insufficient level for operational purposes, which is most likely due to the leakage from the brake fluid reservoir. The brake fluid reservoir was also observed to be corroded.

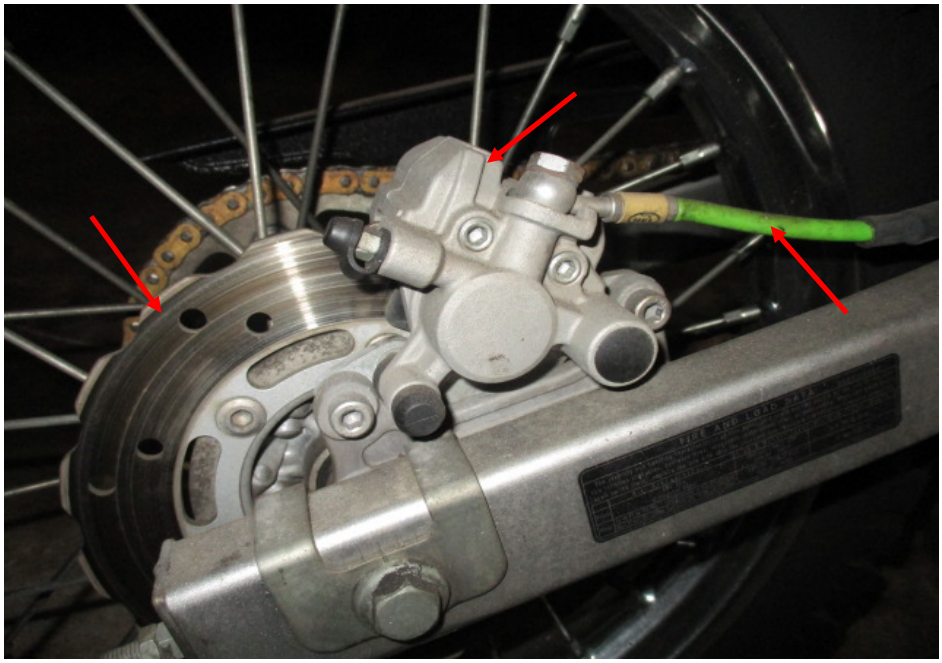


Photo 23 shows a close up view of the rear brake caliper, rear brake disc and rear brake hose (arrowed) of the Motorcycle, which are all part of the components in the hydraulic rear brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.

Conclusion

18. Basing on our physical inspection of the Motorcycle, it appears that the steering system and rear braking system of the Motorcycle were all in serviceable condition. However the front braking system of the Motorcycle was not in serviceable condition.

19. Our findings revealed that the front brake fluid reservoir was found to be corroded. Corrosion of metal parts in the front braking system occurs when water absorbed from moisture in the air by the brake fluid disperses through the brake fluid. The water in the contaminated fluid will cause any metal part in the brake system like the master cylinder, wheel cylinder and pistons to corrode which may lead to failure of these parts. This may cause the front brake to be ineffective.

20. The 2 tyres of the Motorcycle were found to be in serviceable condition. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 2 tyres. The 2 tyres were sufficiently inflated for vehicular operation with remaining tread depth of approximately 5mm and 8mm each.

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