

Your Ref: HLBAISCL2022-00002SL  
Our Ref : CS4/AIS22001211/N

18 February 2022

**Allianz Insurance Singapore Pte. Ltd.**

79 Robinson Road #09-01  
Singapore 068897  
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE  
INSURED VEHICLE PA 9341L ON 7 FEBRUARY 2022**

1. We refer to your letter dated 9 February 2022 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle PA 9341L (herein referred to as “**Insured Vehicle**”) are set out below.

**Inspection of the Insured Vehicle**

3. The Insured Vehicle was physically inspected on 9 February 2022 at the premises of Connect3 Workshop Pte. Ltd. (herein referred to as “**Connect3**”) located at 566 Woodlands Road, Singapore 728697.
4. A static inspection was carried out to the Insured Vehicle where the following general information was recorded:-

Vehicle Registration No.	: PA 9341L
Make / Model	: HIGER KLQ6109Q 6.7L MT ABS TURBO
Chassis No	: LKLR1FSJ79B528753
Year of Registration	: January 2010
Mileage	: N.A. (wiring affected)

5. The exterior body of the Insured Vehicle had sustained fire damage at the top portion as well as rear portion. Affected parts had included the side mirrors, roof, windows, rear panels, both windscreens and engine panel, amongst others. The engine compartment of the Insured Vehicle had sustained severe fire damage. The interior compartment of the Insured Vehicle was completely burnt. See photos 1 – 7 below.



**Photo 1** shows the general view of the frontal portion of the Insured Vehicle at the time of our inspection. The frontal portion of the Insured Vehicle was significantly affected by the fire.



**Photo 2** shows the general view of the left frontal portion of the Insured Vehicle at the time of our inspection. The exterior body of the Insured Vehicle had sustained fire damage at the top portion as well as rear portion. Affected parts had included the side mirrors, roof, windows, rear panels, both windscreens and engine panel, amongst others.





**Photo 3** shows a closer view of the rear portion of the Insured Vehicle at the time of our inspection together with principal consultant Mr Lau. The fire damage was observed to be more severe at its rear portion.



**Photo 4** shows the general view of the top portion of the Insured Vehicle at the time of our inspection. The roof of the Insured Vehicle had sustained serious fire damage.



**Photo 5** shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The Insured Vehicle had sustained severe fire damage at the rear portion.



**Photo 6** shows a general view of the engine compartment of the Insured Vehicle at the time of our inspection. The engine compartment of the Insured Vehicle was severely affected by the fire. Most of the parts inside the engine compartment were found to be completely burnt and/or melted as a result of the fire.





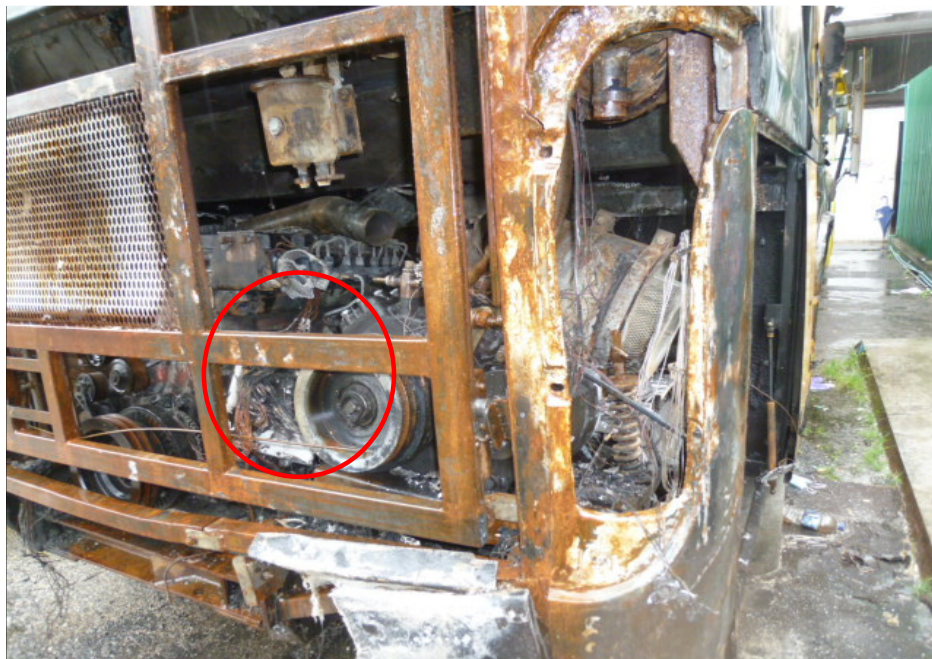
**Photo 7** shows the interior cabin of the Insured Vehicle at the time of inspection. The interior rear cabin was completely burnt.

6. At the time of inspection of the Insured Vehicle, we did not find any additionally fitted electronic and/or electrical component(s) on the Insured Vehicle. There also appears to be no modification(s) fitted on the Insured Vehicle.

### **Investigation and Technical Analysis**

7. For this particular case, the fire appears to have originated within the engine compartment of the Insured Vehicle, somewhere around the rear right portion of the engine compartment. This can be determined from the nature of the fire damage which was more extensive at the rear right portion. Basing on the circumstances of the fires' origin at the material time of incident as well as examining the area where the extent of fire damage was most severe, we can determine that the fire had likely started from the rear right portion of the engine compartment of the Insured Vehicle.

8. Upon closer examination of the area where the fire to the Insured Vehicle had likely started, we had found faint traces of greenish residue on several stretches of original factory fitted wirings leading from the Engine Control Module (ECM) of the Insured Vehicle. The presence of greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 8 - 10 below.



**Photo 8** shows a closer view of the rear right portion of the burnt engine compartment of the Insured Vehicle. Upon closer examination, we had found faint traces of greenish residue on several burnt stretches of original factory fitted wirings leading from the Engine Control Module (ECM) of the Insured Vehicle (circled).





**Photo 9** shows a closer view of the faint traces of greenish residue found on several burnt stretches of original factory fitted wirings leading from the ECM (arrowed) of the Insured Vehicle. The presence of such greenish residue indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

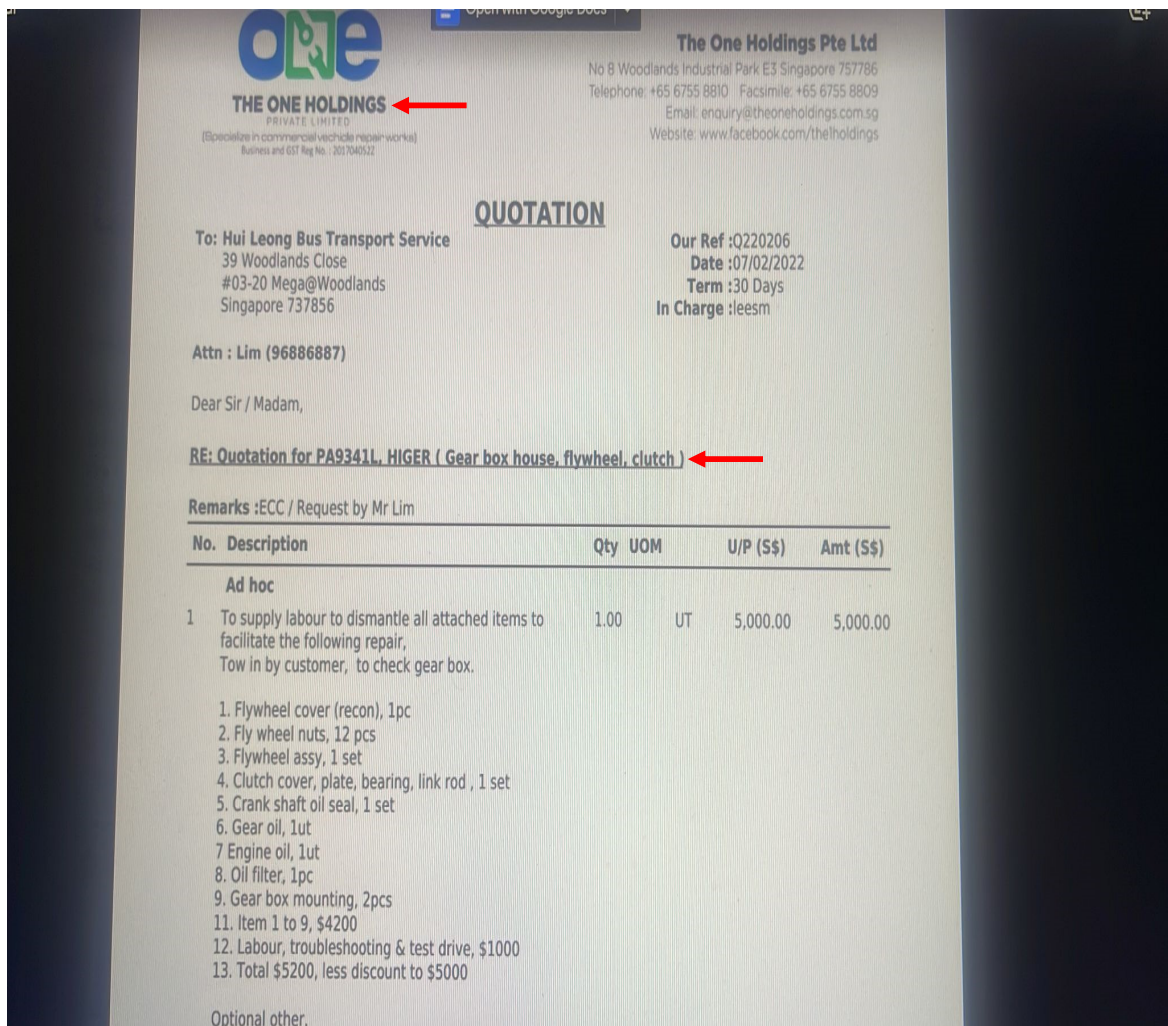


**Photo 10** shows a close up view of the faint traces of greenish residue that was found on several burnt stretches of original factory fitted wirings leading from the ECM (arrowed) of the Insured Vehicle. This seems to suggest the occurrence of an electrical short circuit.

9. From the Singapore Accident Statement which was made by Mr Ng Chee Meng (herein referred to as **“Mr Ng”**), who is the driver of the Insured Vehicle for Hui Leong Bus Transport Services (herein referred to as **“Hui Leong”**), we note that the fire to the Insured Vehicle had started at a time while he was driving the Insured Vehicle. Mr Ng was first alerted of the fire when he saw smoke emitting from the rear portion of the Insured Vehicle.
10. We managed to speak to Mr Ng where we were able to gather further information pertaining to the incident as well as information pertaining to the history of the Insured Vehicle.
11. According to Mr Ng, on 7 February 2022 at around 1930 hours he had just dropped off passengers at Ang Mo Kio and was headed to the heavy vehicle carpark at Bukit Batok near his home. He was driving on the 1st lane along Dairy Farm Road when suddenly the Insured Vehicle broke down. He then heard honking from drivers of passing vehicles pointing towards the rear portion of the Insured Vehicle. Mr Ng alighted and proceeded to the rear portion of the Insured Vehicle where he saw smoke emitting from the engine compartment of the Insured Vehicle. Mr Ng immediately retrieved a fire extinguisher from within the Insured Vehicle. By the time he returned, the engine compartment was on fire. Mr Ng immediately attempted to put out the flames but the fire was blazing. A passerby approached Mr Ng and told him that he had called 995 and asked Mr Ng to keep clear of the Insured Vehicle. Mr Ng then called his office to inform of the incident.
12. The SCDF arrived in about 15 minutes. Firefighters took 30 minutes to extinguish the fire. By that time, Mr Ng's boss, Mr Lim had arrived at the incident scene. The police arrived later. Police officers then took down Mr Ng's statement. Mr Ng also assisted firefighters in their preliminary investigations. Mr Lim made towing arrangements. The Insured Vehicle was towed to Connect3. Mr Lim gave Mr Ng a lift to a heavy vehicle carpark located in Yishun as his next trip was at 2100 hours.
13. The insurance report was made on 8 February at 1739 hours.
14. With regards to the history of the Insured Vehicle, we were able to gather from Mr Lim that the Insured Vehicle was purchased new in 2010.



15. Pertaining to the maintenance aspect, Mr Lim sends the Insured Vehicle for periodic servicing at The One Holdings Pte. Ltd. (herein referred to as “**The One**”) located at 8 Woodlands Industrial Park E3, Singapore 757786.
16. During the course of our investigations, we were also able to obtain from Ms Winnie of Connect3, a document relating to the latest servicing of the Insured Vehicle done at The One. The servicing package included changing of engine oil, oil filter and gear oil. The flywheel assembly, flywheel cover, flywheel nuts, gear box engine mounting, clutch cover, clutch plate, clutch bearing, clutch link rod and crank shaft oil seal were also replaced. Refer to Invoice 1 below.



**THE ONE HOLDINGS**  
PRIVATE LIMITED  
(Specialize in commercial vehicle repair-works)  
Business and GST Reg No. : 2017040522

**The One Holdings Pte Ltd**  
No 8 Woodlands Industrial Park E3 Singapore 757786  
Telephone: +65 6755 8810 Facsimile: +65 6755 8809  
Email: enquiry@theoneholdings.com.sg  
Website: www.facebook.com/theholdings

**QUOTATION**

To: Hui Leong Bus Transport Service  
39 Woodlands Close  
#03-20 Mega@Woodlands  
Singapore 737856

Our Ref : Q220206  
Date : 07/02/2022  
Term : 30 Days  
In Charge : leesm

Attn : Lim (96886887)

Dear Sir / Madam,

**RE: Quotation for PA9341L, HIGER ( Gear box house, flywheel, clutch )**

Remarks : ECC / Request by Mr Lim

No.	Description	Qty	UOM	U/P (\$)	Amt (\$)
<b>Ad hoc</b>					
1	To supply labour to dismantle all attached items to facilitate the following repair, Tow in by customer, to check gear box.	1.00	UT	5,000.00	5,000.00
	1. Flywheel cover (recon), 1pc				
	2. Fly wheel nuts, 12 pcs				
	3. Flywheel assy, 1 set				
	4. Clutch cover, plate, bearing, link rod, 1 set				
	5. Crank shaft oil seal, 1 set				
	6. Gear oil, 1ut				
	7. Engine oil, 1ut				
	8. Oil filter, 1pc				
	9. Gear box mounting, 2pcs				
	11. Item 1 to 9, \$4200				
	12. Labour, troubleshooting & test drive, \$1000				
	13. Total \$5200, less discount to \$5000				

Optional other,

**Invoice 1** shows the last servicing done on the Insured Vehicle at The One (red arrows). The servicing package included changing of engine oil, oil filter and gear oil. The flywheel assembly, flywheel cover, flywheel nuts, gear box engine mounting, clutch cover, clutch plate, clutch bearing, clutch link rod and crank shaft oil seal were also replaced.

17. We asked Mr Lim regarding the date of the invoice which was the same date as the day of the incident. Mr Lim mentioned that on 25 January 2022, Mr Ng had informed the office that the clutch of the Insured Vehicle could not be engaged. The Insured Vehicle was subsequently towed to The One. The workshop had informed Mr Lim that there was an issue with the flywheel assembly and gear box. The Insured Vehicle was repaired and released to Hui Leong on 4 February 2022. Mr Lim also mentioned that the date stated on the invoice (quotation) was the day the invoice (quotation) was sent to Hui Leong after confirming the total amount.
18. To the best of his recollection, Mr Ng mentioned that after the latest repairs were done to the Insured Vehicle, he had not experienced any mechanical or electrical problems with the Insured Vehicle till the day of the incident. He mentioned that there were neither warning lights displayed nor was there an abnormal rise in temperature of the Insured Vehicle when he was driving the Insured Vehicle on the day of the incident.

### **Incident Scene Photographs**

19. We were able to obtain photographs taken by Mr Ng at the incident location. The photographs were taken during the fire as well as after the fire to the Insured Vehicle was extinguished.
20. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Ng. Our close examination of these photographs also showed no unusual foreign material(s) and/or object(s) found on the ground in the immediate area where the Insured Vehicle was positioned. See photos 11 & 12 below.





**Photo 11** shows the SCDF having arrived at the incident location and attempting to put out the fire (circled). In general, the information gathered from this photograph had corresponded to Mr Ng's statement, which is the fire had started from the rear portion of the Insured Vehicle (arrowed).




**Photo 12** shows the Insured Vehicle after the fire was extinguished. In general, the information that could be gathered from this photograph had corresponded to Mr Ng's statement, which is the police were also present at the incident location (arrowed).

21. Based on the vehicle service record invoice provided, we are of the opinion that it is unlikely that the fire could have been caused by poor maintenance of the Insured Vehicle. From our review of the invoice (quotation) provided, the components repaired and replaced were mechanical in nature. None of the parts stated were electrical components.



22. Given the circumstances of the incident as reported, the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely as Mr Ng had mentioned to us there were no indications of abnormally high temperatures on the Insured Vehicle.
23. The possibility of the fire being due to external factors (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) would also seem unlikely as the fire occurred as Mr Ng was driving the Insured Vehicle. The location where the Insured Vehicle caught fire was also observed to be not at a secluded location.
24. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factors would seem unlikely. The fire being due to electrical nature is also supported by the faint traces of greenish residue that were found on several burnt stretches of original factory fitted wirings around the rear right portion of the engine compartment of the Insured Vehicle, which was earlier discussed in paragraph 8 above.
25. Our checks with both local and international bodies and associations had revealed that at the time of writing this report, there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may possibly pose a fire risk. See search result from LTA below.



### Vehicle Recall Details

ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE

<i>Owner ID Type</i> <b>Business</b>	<i>Owner ID</i> <b>728D</b>
<i>Vehicle No.</i> <b>PA9341L</b>	<i>Make/Model</i> <b>HIGER/ KLQ6109Q 6.7L MT ABS TURBO</b>
<i>Engine No.:</i> <b>ISBE430021923568</b>	<i>Chassis No.:</i> <b>LKLR1FSJ79B528753</b>
<i>Recall Details:</i> <b>No Recall Detail records</b>	

## **Conclusion**

26. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, we are of the view that the cause of fire to the Insured Vehicle was of electrical in nature. For this particular case, the fire had originated along the original factory fitted wirings leading from the ECM, around the rear right portion of the engine compartment of the Insured Vehicle.
27. We did not find any evidence which had suggested that the cause of fire to the Insured Vehicle was due to poor maintenance and/or recurring electrical problem.
28. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall of electrical nature to similar make and model vehicle as the Insured Vehicle that may pose a fire risk.



**Muhd Nazril**

*Senior Technical Investigator*



**Ang Bryan Tani**

*AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA*

*Senior Technical Investigator*

*Technical Investigation & Reconstructionist (SAE-A)*

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