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COMMENT ON MODIFICATIONS FITTED TO THE MOTOR CAR SJH 9497H

1. I refer to your request dated 06 January 2021.
2. I have reviewed the Court/Police papers that you have provided, in particular the section titled "Vehicle Inspection by STA". My comments with regard to the modifications fitted on the motor car SJH 9497H are set out in the below paragraphs.
3. For completeness, the motor car SJH 9497H is no longer available for inspection hence my comments are based purely on the information contained in the Court/Police papers that were provided to me.
4. It was stated in the section titled "Vehicle Inspection by STA" that illegal modifications have been carried out to enhance the performance of the motor car SJH 9497H. The modifications carried out are shown below, which is extracted from the Court/Police papers.

Vehicle Inspection by STA

19 Senior Automotive Engineer, Tan Jiat Shee, of STA Inspection Pte Limited conducted an inspection on the accused's car and concluded as follows:

- (a) The vehicle engine, steering and braking systems are in serviceable condition.
- (b) Test drive has been conducted to ascertain the performance and control systems that the vehicle is in good condition.

Illegal modifications have been carried out to enhance the vehicle performance.
 - (i) Vehicle suspension system – lower and stiffen suspension system
 - (ii) Engine system – change of high tension cable and exhaust pipe
 - (iii) Road wheel system – change to bigger wheel (from original size of 195/65-15 to 215/45-17, two size bigger is not allowed)
- (c) Impact point was on the front left side of vehicle. The impact is great as seen from the damages of the various vehicle parts.
- (d) No other mechanical defects were found on the vehicle that could stall engine or make it stop.

Vehicle Suspension System

5. The suspension system of the motor car SJH 9497H was lowered and stiffened. Under the Land Transport Authority's (LTA) guidelines on modification, modification of a vehicle's suspension system falls under the category of modifications that do not need LTA's approval.
6. A lowered and stiffened suspension will improve the road handling of a vehicle. The centre of mass of a vehicle becomes nearer to ground, reducing flexing of the vehicle during cornering or travelling along road bends.
7. A suspension that is stiffened also reduces the up and down oscillation movement of a vehicle. The stability of a vehicle whilst travelling at high speed along uneven road surface is hence improved by this modification.

Engine System

8. For the engine system of the motor car SJH 9497H, modification was carried out to its high tension cable and exhaust pipe. High tension cable is commonly referred to as spark plugs of a vehicle. This modification falls under the category of modifications that do not need LTA's approval. This modification allows for better spark to ignite the air/fuel mixture during the combustion process of petrol engine.
9. For the exhaust pipe, this modification falls under the category of modifications that need approval from LTA. Modification of a vehicle's exhaust system will improve the engine performance of the vehicle.
10. I note from the Court/Police papers that the rear exhaust pipe and silencer of the motor car SJH 9497H was cut and welded. This allows the exhaust gases to have unrestrictive flow out of the vehicle after combustion, reducing back pressure. Power from the engine does not need to be utilized to counter this back pressure thus improving the engine performance of the vehicle.

Road Wheel System

11. The size of the wheel rims and tyres of the motor car SJH 9497H was changed to a bigger size, from an original size of 195/65-15 to 215/45-17. Installation of sport rims and alteration of tyre sizes fall under the category of modifications that do not need LTA's approval. However, the size of the sport rims and tyres must follow the recommendation of the vehicle's manufacturer.

12. Notwithstanding, whether within vehicle manufacturer's specification, the tyres fitted on the motor car SJH 9497H are wider and has lower sidewall height. This would allow for a wider contact area between the tyres and the road surface. With more contact on the road surface, the overall road handling of the motor car SJH 9497H, like during braking, during cornering etc, is improved.

Conclusion

13. In summary, the modifications fitted on the motor car SJH 9497H are all LTA compliant except for the exhaust system, which would require LTA's approval. Regardless of whether LTA and/or vehicle manufacturer's compliant, the engine performance and road handling of the motor car SJH 9497H is enhanced by the modifications carried out to the suspension system, engine system and road wheel system of the motor car SJH 9497H.



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