

Your Ref: SFE 83M
Our Ref : CI/TP21011944/D

22 November 2021

Chiam Jun Wen Benjamin
23C Jalan Hajjah
Singapore 468719

AUTOMOBILE INSPECTION REPORT OF MOTOR CAR SFE 83M

1. I refer to your request on 28 October 2021 to conduct a physical inspection of a motor car bearing registration number SFE 83M (herein referred to as "**Motor Car**").
2. The purpose of this inspection was to primarily determine: -
 - a) whether the manual transmission on the Motor Car was fitted in a secure manner that will not affect the structural integrity of the Motor Car; and
 - b) whether there was any operational issue(s) to the manual transmission system of the Motor Car.
3. Following the request, I had carried out a physical inspection of the Motor Car on 12 November 2021 at the premises of No. 48 Toh Guan Road East #02-136 Enterprise Hub, Singapore 608586. I also conducted a short test drive of the Motor Car during this inspection.
4. I now set out below my observations and comments with respect to this inspection and test drive.

Inspection of the Motor Car

5. The following general information of the Motor Car was first recorded at the time of my inspection: -

Vehicle Registration No.	: SFE 83M
Make / Model	: Toyota Crown Royal
Chassis No	: JTDBD724000030783
Year of Registration	: 2000 (June)
Mileage	: 120,471km

6. The Motor Car was fitted with a 5-speed manual transmission system, consisting of 2 main housings. The input side of the transmission, which houses the main shaft and various gear sets is bolted to the crankshaft side of the engine block. The gear set in the input side of the transmission connects to the transfer case, which is the second of the 2 main housings. The transfer case is also the output (rear) side of the Motor Car's transmission. The transfer case connects to the propeller shaft, which leads to the rear differential of the Motor Car. There was no crack and/or hole observed on both housings.
7. A bracket mounted to the underside of the floorboard of the Motor Car, via bolts and nuts, supports the output (rear) side of the transmission. Rubber bushing, sitting between the transmission and this bracket, absorbs any vibrations arising from the rotation of the transmission gears, minimising any stress to the bracket and correspondingly also minimise any stress at the mounting points of this bracket.
8. The Motor Car's transmission was operated by a clutch pedal, for engaging and disengaging the transmission gears, and a manual gear shifter for manually selecting the transmission gear to be engaged. See photo 1 – 9 below taken during my inspection of the Motor Car.



Photo 1 shows the Motor Car hoisted for checks on its undercarriage, in particular to the transmission.



Photo 2 shows a general view of the transmission (arrowed) that was fitted on the Motor Car. The front (input) side of the transmission is bolted to the crankshaft side of the engine block. The gear set in the input side of the transmission connects to the transfer case, which is the output (rear) side of the Motor Car's transmission. The transfer case connects to the propeller shaft, which leads to the rear differential of the Motor Car.

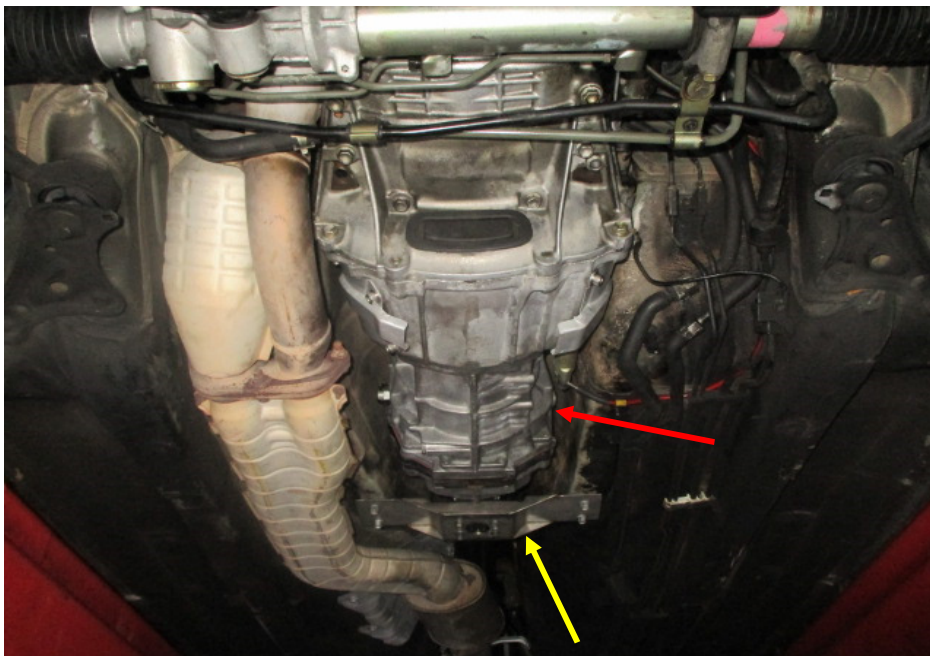


Photo 3 shows a closer view of the transmission (red arrow) that was fitted on the Motor Car. The front (input) side of the transmission is bolted to the crankshaft side of the engine block while the rear (output) side of the transmission is connected to the propeller shaft, which leads to the rear differential of the Motor Car. A bracket (yellow arrow) was mounted to the underside of the floorboard of the Motor Car, via bolts and nuts. This bracket supports the rear (output) side of the transmission.



Photo 4 shows a closer view of the bracket (arrowed) mounted to the underside of the Motor Car's floorboard via bolts and nuts. The bracket supports the rear (output) side of the transmission. Rubber bushing absorbs any vibrations arising from the rotation of the transmission gears, minimising any stress to the bracket and correspondingly also minimise any stress at the mounting points of this bracket.



Photo 5 shows another view of the bracket (arrowed) that supports the transmission of the Motor Car, as viewed from the rear to front. This bracket at the rear of the transmission was with rubber bushing, which absorbs any vibrations arising from the rotation of the transmission gears, minimising any stress to the bracket and correspondingly also minimise any stress at the mounting points of this bracket.

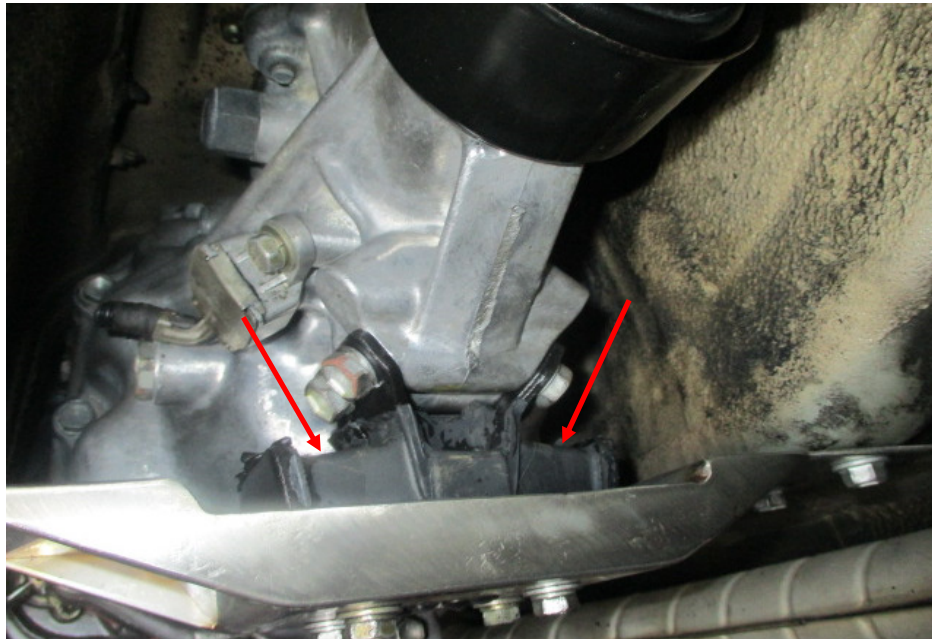


Photo 6 shows the rubber bushing (arrowed), sitting between the transmission and the bracket. The rubber bushing absorbs any vibrations arising from the rotation of the transmission gears, minimising any stress to the bracket and correspondingly also minimise any stress at the mounting points of this bracket.

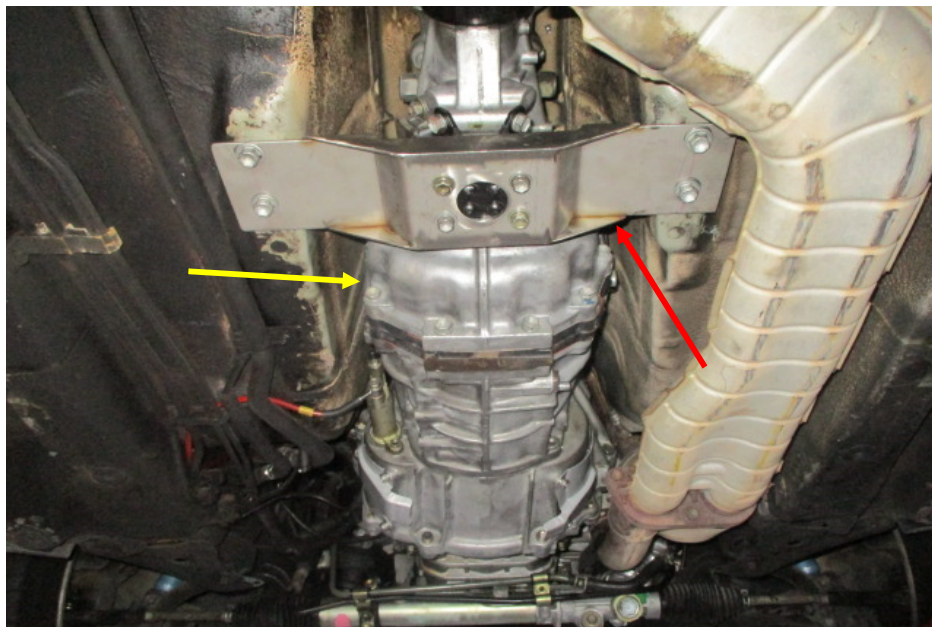


Photo 7 shows the transmission that was fitted on the Motor Car, as viewed from the rear to front. The front (input) side of the transmission is bolted to the crankshaft side of the engine block while the rear (output) side of the transmission, which is also referred to as transfer case (yellow arrow), is connected to the propeller shaft, which leads to the rear differential of the Motor Car. A bracket (red arrow) was mounted to the underside of the floorboard of the Motor Car, via bolts and nuts. This bracket supports the rear (output) side of the transmission.



Photo 8 shows the manual gear shifter (arrowed) that was fitted on the Motor Car, for manually selecting the transmission gear to be engaged.



Photo 9 shows the clutch pedal (arrowed) of the Motor Car, for engaging and disengaging the transmission gears.

9. I subsequently test drove the Motor Car to primarily determine whether there was any operational issue(s) to its manual transmission system. The Motor Car was driven within the building premises of No. 48 Toh Guan Road East, Enterprise Hub.
10. The general performance of the transmission system of the Motor Car was satisfactory throughout the Motor Car's short test drive. Operationally, I did not find any abnormal behaviour of the transmission system. I was able to engage the different transmission gears without any significant difficulty. Selecting the required transmission gear by manually upshifting and downshifting of the gear shifter was relatively smooth. The Motor Car was also able to reverse when the gear was manually shifted to reverse. The mileage of the Motor Car at the end of the test drive was 120,472km.
11. In general, the transmission of the Motor Car was found to be secured properly. It was not mounted onto the chassis body or any integral body part of the Motor Car. The structural integrity of the Motor Car is not compromised by the fitment of this particular transmission. Overall, the operating condition of the Motor Car's transmission system was satisfactory throughout the Motor Car's test drive.

**Ang Bryan Tani**

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

Senior Technical Investigator

Technical Investigation & Accident Reconstructionist (SAE-A)

DISCLAIMER OF LIABILITY TO THIRD PARTIES:- This Report is made solely for the use and benefit of the Client named on the front page of this Report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the Report wholly or in part. Any third party acting or relying on this Report, in whole or in part, does so at his or her own risk.