

Experimental Investigation of Mechanical Friction Influence in Semi-Hydraulic Clutch Actuation System Over Mileage

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Abstract : In the current automobile scenario, there comes a demand on more sophistication and comfort drive feel on passenger segments. The clutch pedal effort is one such customer touch feels in manual transmission vehicles, where the driver continuous to operate the clutch pedal in his entire the driving maneuvers. Hence optimum pedal efforts at green condition and over mileage to be ensured for fatigue free the driving. As friction is one the predominant factor and its tendency to challenge the technicality by causing the function degradation. One such semi-hydraulic systems shows load efficiency of about 70-75% over lifetime only due to the increase in friction which leads to the increase in pedal effort and cause fatigue to the vehicle driver. This work deals with the study of friction with different interfaces and its influence in the fulcrum points over mileage, with the objective of understanding the trend over mileage and determining the alternative ways of resolving it. In that one way of methodology is the reduction of friction by experimental investigation of various friction reduction interfaces like metal-to-metal interface and it has been tried out and is detailed further. Also, the specific attention has been put up considering the fulcrum load and its contact interfaces to move on with this study. The main results of the experimental data with the influence of three different contact interfaces are being presented with an ultimate intention of ending up into less fatigue with longer consistent pedal effort, thus smoothens the operation of the end user. The Experimental validation also has been done through rig-level test setup to depict the performance at static condition and in-parallel vehicle level test has also been performed to record the additional influences if any.

Keywords : automobile, clutch, friction, fork

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