

“STUDY OF TAMPERING ODOMETER READING IN MOTOR VEHICLE”

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Abstract : The tampering of odometer reading of motor vehicle is very common presently. These frauds are done generally in four wheelers and specifically in cars. The increase in odometer reading is done to generate more money while the actual running of vehicle is less. At the same time the decrease in odometer reading is done when the vehicle is to be selling out. The research paper studies all the aspects of existing odometer reading increasing and decreasing methods with mechanical and digital dashboard.

Key words : Odometer, Tampering, Vehicle, Dash board.

Introduction

A typical dash board content of any car is contained mainly, the speedometer, Odometer, fuel indicator and engine temperature indicator. The odometer displays the total distance the vehicle has been driven [1]. The odometer meter reading in motor vehicles is tampered for according to the purpose or use. Mostly this tampering with increase in odometer reading is done when the motor vehicle is running in any public, private sector as contract engagement on yearly basis. That means the vehicle is paid a fixed amount for certain kilometres and if the vehicle is run above prescribed limit extra amount is paid by the sector to the service provider. In government sector the vehicle is not run most of the time due to lack of maintenance. At these times the vehicle is to be shown on road and monthly running is shown with help of increasing the odometer reading. The methods are also available to decrease the odometer reading as to sell the vehicle. Decreasing the odometer reading assures the buyer that the vehicle is not run as the odometer is showing less reading. There are mainly three types of odometer reading panels used in motor vehicle and they are mechanical, digital and combination of both. This topic is generalized in the garages so more photographs are used for better understanding of the subject.

Mechanical System

The Mechanical system of metering is old one having attached with cable and the circular movement of cable changes the reading in meter. The circular motion of cable is provided by a small gear engaged to the output shaft of the transmission. The odometer gear having cable system is used in Tata 207, Tata Sumo, Hyundai old santro, old and new Maruti Suzuki 800, old and new Maruti Suzuki Alto etc [2]. For increasing the odometer the cable is attached with a piece of pipe and attached to a table fan. The blades of the table fan are removed. After starting the fan approximately in a single day 1000 km is increased [Figure 1, 2]. For decreasing the reading the complete dash board is taken out and the gear assembly adjusted [Figures 3, 4, 5]. In this system error may arrived if the cable is twisted so the kilometre shown may be wrong.

Digital System

The digital or electronic systems mainly are of two types contact and noncontact. Both are using magnetic sensors for sensing the rotation of transmission shaft. The contact type uses the same arrangements as mechanical system but instead of flexible cable the signals of the output transmission shaft moved digitally from the sensor. The toothed wheel mounted to the magnetic sensor that counts the pulse as each tooth of the wheel goes by [Figures 6, 7&8]. The odometer

sensor with gear arrangement is used in Tata Indica, Tata Indigo, Hyundai accent old, Hyundai Elentra old, Tata magic etc. The non contact type sensors do not have any contact with transmission shaft. The sensor senses the shaft movement and converts the same digitally. The pulse collected from both the sensors as used goes to Engine Control Unit (ECU) from where it is transferred to the odometer. The non contact sensors used in Maruti Suzuki Swift Maruti Suzuki Ritz, Tata vista, Mahindra Scorpio, Hyundai i-10, Hyundai i-20, Toyota innova etc. For increasing the reading simply a single core wire is fixed in the middle pin of the sensors as shown in fig 8 and 10. The attached cable is thrown in front of the music system speakers. When the vehicle is not moving the speaker volume is increased. The increased volume from speakers taken by the sensors as movement of the transmission shaft and hereby increase the readings of the odometer. For decreasing the odometer reading the complete panel is taken out [Figures 11] and it is corrected for desired reading with connecting the I/C to the computer software. The soldering is done professionally that no tampering marks are shown in the circuit board.

Analysis

As the above study shows that mechanical, digital and using both the arrangement cannot stop the tampering odometers. But it may be stop on the basis of legal aspects. In India at presently when the vehicle is sold the buyer needs mainly registration certificate, road tax receipt, insurance policy of the vehicle, NOC from the respective bank branch if vehicle is financed, pollution certificate etc and other

vehicle related document such as sale receipt, owner manual, service history, extra keys etc. Exchanging the same both (Seller and Buyer) signed the Regional Transport Offices forms and pay fees as applicable like form 28 (If buyer's resident is in another RTO (Regional Transport Office) jurisdiction), form 29 (transfer of ownership), form 30 (the form of intimation and transfer of ownership) [3]. With all these documents owner must also signed and declare that he had not done any manipulation tampering in the odometer reading. If proved later on in any service centres he the buyer can sue the seller in court on fraud charges.

This odometer declaration system is available in almost all the states of USA. Where seller has to fill the form and submit the same to the authority. This system is to be adopted by all the RTO offices in India. It is also part of vehicle manufacturer to drive an awareness programme so these frauds can alert the public on this issue.

Conclusion

The Tampering are frauds and it has to be stopped. But due to technological advancement everyday it is very difficult to stop these kinds of illegal activities. Now there are soft wares available which can be operated through the wifi, blue tooth mode from a smart phone to increase and decrease of odometer reading. New methods are generated for tampering as the vehicles are computers based. The buyers and users must be more conscious and well aware regarding the latest development. So that they can have safe purchases as well as they must not be cheated.



Fig 1 Attaching the Odometer cable to the fan.



Fig 2 Running of fan increasing odometer reading.



Fig 3 Front view of Mechanical Dash Board

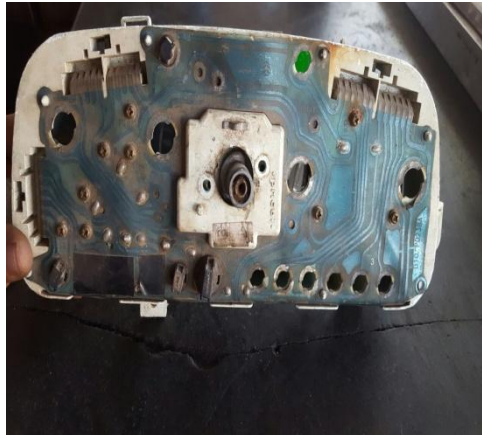


Fig 4 Rear view of Mechanical Dash board



Fig 5 Gear train of Odometer for adjustment



Fig 6 Sensor for gear arrangement



Fig 7 Gear for the Sensor



Fig 8 Tapping of wire for increasing odometer reading



Fig 9



Fig 10



Fig 11 Top side of internal digital dashboard

Reference

- 1 *Toyota Innova Owner's Manual page 65*
- 2 *Data collected from local Vehicle Garages*
- 3 *Data collected from Regional Transport Office Durg*
