



Understanding Fuel Tank Capacity

The Measurement Standards Division commonly receives complaints from consumers because they believe that a gas station wrongfully charged them for more fuel than they actually received. While this may sometimes be the case, often there is a misunderstanding of the amount of fuel that can be dispensed into their vehicle. Following is more information regarding possible reasons for variations in fuel tank capacity.

Manufacturers rated capacity

Typically the owner's manual provides a reasonable estimate of your vehicle's fuel tank capacity. Some manufacturers estimate that the capacity of a fuel tank may vary by as much as 3% from the actual tank capacity. This results from normal variations in design characteristics, the manufacturing process, and other inherent factors. The rating is determined by taking an average volume based upon the capacities of multiple tanks.

Furthermore, the rated capacity may include only the usable portion of the fuel tank or it may include both the usable and unusable portions. The unusable volume is the portion of the fuel tank's liquid capacity that lies at the bottom of the tank out of reach of the fuel pump. The usable volume is the portion that can be delivered through the filler pipe into the tank when the vehicle is level. The vehicle's fuel tank capacity does not include the volume of the filler pipe or the vapor headspace, which is the portion of the tank compartment at a level above the filler pipe neck.

To verify the manufacturers rated capacity of your vehicle's fuel tank, you can go to <http://www.edmunds.com/apps/usedmatrix/UsedMatrix> and view the specifications for your vehicle.

Topping off

Sometimes people attempt to deliver additional fuel after the gas pump automatically shuts off, commonly known as "topping off." When this happens, the additional fuel begins to fill the vapor headspace and the filler pipe, which are not considered part of the tank's rated capacity. This may result in a receiving more fuel than the rated capacity in the owner's manual. This may also occur if the lanes that surround the gas pumps are not level and some of the fuel shifts into the vapor headspace, thus delivering more fuel into the tank.

Indicated volume

When the fuel tank indicates a certain level, consumers often assume that this indication represents a corresponding fraction of fuel tank capacity. For instance, if you have a fuel tank rated at 18 gallons and the fuel gauge indicates that you have half a tank of gas, you might assume that you have 9 gallons of fuel remaining in the tank. If you then fill-up the tank and receive more than 9 gallons you would assume you now have more than 18-gallons in the tank and would conclude that the gas pump is in error.

Besides the fact that the rated capacity is only an estimate, many variables can affect a vehicle's fuel level indication. A shift in the fuel level may occur when the vehicle is not on level ground such as when on a hill or traveling around a curve. This temporary change in the position of fuel within the tank can cause the fuel gauge to indicate more or less fuel than is actually in the tank. The indication of fuel in the tank can even vary depending upon the position of the driver's eye when reading the gauge on the instrument panel.

Fuel mileage

Many vehicles today have trip computers and mechanisms for estimating mileage to assist the driver in planning travel based upon the fuel that remains in the tank. The vehicle's mileage for each gallon of fuel depends upon a number of conditions such as maintenance, cargo and passenger load, use of accessories such as air conditioning, driving habits, terrain, traffic, weather, and even fuel composition. When these factors require the engine to work harder, fuel consumption increases. Trip computers may calculate the estimated miles that can be traveled on the remaining fuel based upon the vehicle's fuel economy during a specific driving period. The estimated miles may vary greatly depending upon these external conditions.

Device errors

The above information is helpful in addressing complaints related to gas pump accuracy when the complaint is based upon the fuel tank's rated capacity or the fuel tank indications. However, in some instances there may actually be a problem with the accuracy of the meter used to dispense fuel or its manner of use. Consequently, the Measurement Standards Division investigates all fuel quantity complaints in an attempt to determine the cause of the discrepancy.

More information

View our website at: <http://oregon.gov/ODA/MSD>

Check your vehicle's rated fuel tank capacity at:

<http://www.edmunds.com/apps/usedmatrix/UsedMatrix>

Contact us

This information was designed to help provide an understanding of possible reasons for variations in the rated fuel tank capacity of a vehicle and the amount of fuel delivered. For questions or to request a complaint form, contact the Measurement Standards Division, or submit a complaint form online: http://oda.state.or.us/dbs/fuel_complaint/fuel_complaint.lasso.

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