

# WORK-ENERGY-POWER

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## 2015 Volkswagen Golf, a Crowd-Pleaser in Many Forms



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**INTRODUCTION:** This Golf TSI was Car of the Year in 2015. It's very efficient at 37 mpg highway. From [vw.com](http://vw.com) this car's weight is 2901 lb.  $X$  = efficiency of cars.

$$X = P_{OUT} / P_{IN} , \quad X P_{IN} = P_{OUT} = W_{OUT} / t$$

$$W_{OUT} = \text{useful kinetic energy of car} = 1/2 m V^2$$

Thus:  $X P_{INPUT} = [ 1/2 m V^2 ] / t$

**QUESTION:** Find efficiency  $X$  of this Golf TSI ?

**HINTS:** 1 HP = 550 ft. lb./s., mass = weight/g ,  $g = 32 \text{ ft./s.}^2$   
60 mph. = 88 ft./s.

**ANSWERS:** 47%

**COMMENT:** Turbo charged engines by EPA measures are 40% or more efficient. Thus, your computation is plausible.

THE [Volkswagen Golf](#) was introduced in 1974, effectively replacing the original people's car, the Beetle. Now, 40 years later, Golf is not as beloved (there's no reboot of "The Love Bug" with a Golf as Herbie, is there?), but this seventh-generation hatchback deserves immense respect. It has won nearly every award, including North American Car of the Year and World Car of the Year. There is the all-electric e-Golf, an incredibly fuel-efficient TDI diesel, the high-performance GTI and an even more potent all-wheel-drive R model. A two-door 5-speed manual Golf starts at \$18,815 with destination, and various models can please all but the luxury buyer. TSI gets its scoot from a velvety-smooth 1.8-liter turbocharged 4-cylinder engine, producing (170 horsepower) and 200 pound-feet of torque low in the power band, with the ((dash to 60 in just under eight seconds)). A 6-speed automatic is standard in the top-line SEL model that I drove. No, it's not the lovely dual clutch unit in the GTI, but there are paddle shifters. Longer, wider and lower than the outgoing car, the Golf is lighter by up to 79 pounds. If the cabin's material quality were any better, the Golf would be draining sales away from the VW subsidiary, Audi. As for mileage, the Golf with the automatic transmission is rated at 25 city and 36 highway. I averaged 28 while fully appreciating that the TSI was a hoot to chuck into corners.