

POWER-WORK-ENERGY

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The Ferrari 488 GTB Is an Operatic Thrill



INTRODUCTION:

$X = \text{Efficiency} = P_{\text{OUT}}/P_{\text{IN}} = [W_{\text{OUT}}/t]/P_{\text{IN}} = [1/2 m v^2]/P_{\text{IN}} t$
Since W_{OUTPUT} is converted to useful kinetic energy.

QUESTIONS: (a) At Ferrari site weight is listed as 3355 lb. Find the 488's mass in slugs? (b) Find linear kinetic energy at 60 mph?, (c) Convert 661 HP to ft. lb./s. ? (d) Find efficiency X of this 488 GTB?, (e) Find linear acceleration of this car going from 0 – 60 mph in 2.9 s.? (f) Find distance x traveled in acceleration 0 – 60 mph? (g) Comment of (e)'s result?

HINTS: weight/gravity = mass , 550 ft.lb./s. = 1 HP, 60 mph = 88 ft./s. , $v^2 = v_0^2 + 2 a x$, $v = v_0 + a t$

ANSWERS: (a) 104.84 slugs ,(b) 405,955 ft. lb. (c) 363,550 ft. lb./s.,(d) ~ 0.385 or 38.5%, This efficiency is quite normal for twin turbo engines. (e) 30.35 ft./s.² (f) 127.6 ft., (g) Forward acceleration almost 1 g ! Thus, a 180 lb. driver of this rocket car would experience a horizontal force on his/her back during 0 – 60 mph in 2.9 s. equivalent to almost the drivers body weight of a little less than 180 lb. Quite an experience for sure.

CARS? Cars are transportation. Ferraris? They are something else altogether. The 488 GTB, which is the successor to the 458, is an automobile to be sure, but also equal parts art, science, music and Six Flags roller coaster riding on an aluminum structure. Want to know what it's like to be Oprah? Buy one of these. Fingers point. People jump and scream. Hundreds of smartphone cameras bear down on the sensuous aluminum skin. You've been warned.

This passport to instant celebrity status **starts at about \$250,000**, but, undoubtedly, most 488 buyers will want extras. **(((The 3.9-liter V8 in the 488 gets twin-turbocharging. The result is a staggering 661 horsepower (or would that be stallions?) and 561 pound-feet of torque)))**. Fun fact. The 488 gets its moniker from the displacement of each cylinder:

488cc. Power is routed to the back wheels through a 7-speed dual-clutch automatic gearbox. **(((It can also be a Saturn V rocket. Everyone should experience a zero to 60 miles-an-hour rush of 2.9 seconds)))** at least once. Curved fins under the body near the front tires act as vortex generators, increasing downforce. Look closely at the huge gills on the rear hips to find they aren't just for engine cooling, they also vent out near the tail lamps. Those and a subtle slot integrated into the tail act as aerodynamic aids. No tacked-on wings or spoilers sully the seductive shape here.