

[Skip to main content](#)



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Fuel consumption calculations

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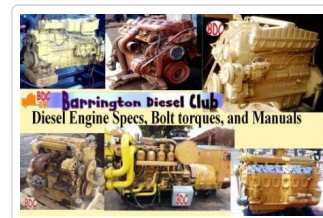
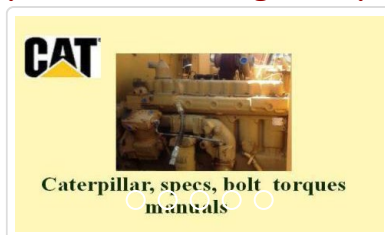
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Fuel consumption calculations
convert to liters per hour and US
gallons per hour



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Fuel Consumption units - conversion table

This table converts between the different units of fuel consumption one is most likely to encounter. It may be expanded in time to include other measures for fuel consumption.

The choice of Specific Gravity of Diesel = 0.853 @ 15.5°C is quite arbitrary and will vary from time to time with different grades of diesel and in different countries; while some engine manufacturers may even specify a different specific gravity for their own tests, presumably for very good reasons. The ASTM for e.g. specify a density between 0.820 to 0.845 for EN590 diesel, while the European standard for the same fuel is between 0.820 and 0.860 kg/m³.

We have used it here because it was a value that Detroit Diesel used for some time, but all it really does here, is to establish a benchmark from where to express ourselves, and from where to work.

Table Diesel engine Fuel Consumption conversions

Basis: Specific Gravity of Diesel = 0.853 @ 15.5°C

Unit	Multiply by	to get
lbs / hp hour	0.533	liter / hour
lbs / hp hour	0.1408	US gal / hour
US gal / hour	3.7854	liter / hour
liter / hour	0.2642	US gal / hour
kg / hour	1.175	liters / hour
grams / hour	0.001175	liters / hour
Regard all values as approximate		

Fuel Consumption calculations

Our tables are based on the following:

- Diesel - Specific Gravity = 0.853 @ 15.6°C
 - i.e. 1 litre of diesel weighs 0.853 Kgs
 - & so 1 Kg of diesel is $1/0.853 = 1.172$ liter
- $\text{kg} = \text{lbs} \div 2.2$
 - $\text{Kgs/hp hour} = \text{lbs/hp hour} \div 2.2$
 - & so $\text{liter /hp hour} = \text{Kgs/hp hour} * 0.853$
 - & $\text{liter /hp hour} = \text{lbs/hp hour} \div (2.2 * 0.853)$

- & so liter /hp hour = lbs/hp hour ÷ 1.8766
- e.g. 0.40 lbs/hp hour = 0.40 ÷ 1.8766 = 0.2132 liter /hp hour

Now to use the above data in practical examples:

An engine producing 310 hp at constant speed using 0.350 lbs of diesel per hp hour uses the following amount of fuel:

$$310 \times 0.350 = 108.5 \text{ lbs of diesel per hour}$$

or

$$310 \times 0.350 \div 1.8766 = 57.8 \text{ liter per hour}$$

An engine at constant speed producing 231 kW at that speed, & using 0.350 lbs of diesel per hp hour uses the following amount of fuel:

$$231 \times 1.341 \times 0.350 \div 1.8766 = 57.8 \text{ liter per hour}$$

More on Diesel Engine Fuel Consumption

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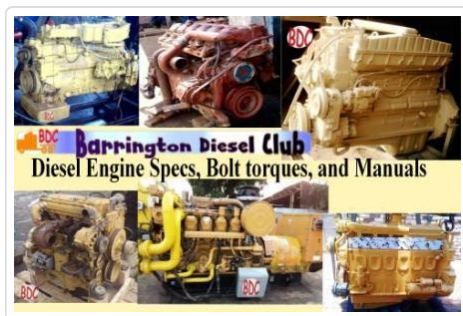
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Barrington Diesel Club

email: steve@barringtondieselclub.co.za
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