

B M E P

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Bmepstry.lwp

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BAD MOTORS EAT PISTONS

Written JANUARY

WHY BMEP , WHY NOT JUST TORQUE — H.P.?

The term BMEP is an engineering term that means Brake Mean Effective Pressure. Mean is another word for average, which in this case means average effective pressure of all stroke cycles. This is used to evaluate all engines whether they are Two or Four Cycle.

BMEP is a function of temperature of the gases in the cylinder. To increase the temperature you need to burn more fuel, thus making more heat. Or another way is to make better use of the existing fuel.

Torque is a function of BMEP and displacement only. HP is a function of torque and rpm.

It can be said a high BMEP and a low rpm, or a low BMEP and a high rpm, can equal the same power. Larger valves, ports, pipes, compression, etc. all come into play to increase the volumetric efficiency of the engine. The most effective is to increase the number of cylinders. The more efficient it is, the higher the average pressure or BMEP.

Pressure increases by compression alone can do wonders to a stock engine, it is, by factory choice, usually a low number. Note that after compression gets very high it starts to work against you in pumping losses, and in the amount of heat lost to the surrounding parts.

These two formulas are similar and easy to use.

Two cycle:...

$$\text{BMEP} = (\text{HP} * 6500) / (L * \text{RPM})$$

2-cycles require only one half of 4-cycle BMEP to produce the same power at the same rpm.

Four cycle:...

$$\text{BMEP} = (\text{HP} * 13000) / (L * \text{RPM})$$

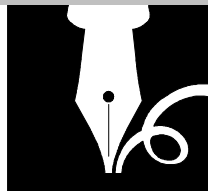
L = Displacement in Liters

i.e. ... 80cc would be .080 Liters

125cc would be .125 Liters

500cc would be .500 Liters

1 cu.in. = 16.39 cc



Torque and HP show what a given engine produces in the terms of work done in a period of time.

If for example you had the following engines to compare, how would you proceed?

- 1> 2-cycle, one cylinder 80cc with 20 HP
- 2> 4-cycle, one cylinder 500cc with 30 HP.
- 3> 2-cycle, four cylinder 750cc with 160 HP.
- 4> 4-cycle, eight cylinder 350 cu. in. (V8) with 350 HP --- 350 cu.in. = 5.736 Liters.
- 5> 2-cycle, two cylinder GP 250cc with 90 HP.

Would you use HP, TORQUE, HORSEPOWER to CUBIC INCH, HORSEPOWER to CC, or ? Well, the engineers chose and use the formulas for BMEP to evaluate the many types of engines.

Try for yourself, the following *RPM* numbers on the above examples.

1> 11500 : 2> 7500 : 3> 8250

4> 5000 : 5> 11750

Your BMEP answers, rounded off, should be:.....

1> 141 : 2> 104 : 3> 168

4> 158 : 5> 199

I hope this short walk through the world of Torque, HP and BMEP is beneficial to you.

My TSR SOFTWARE is loaded with more information on these subjects and is available to all interested parties. Have a great day!

TWO-STROKE HOP-UP SOFTWARE

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