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Torque Induction<sup>®</sup> is more than  
a word on the outside of a Yamaha.  
It's a stainless steel valve on the inside.  
Here's what it does:

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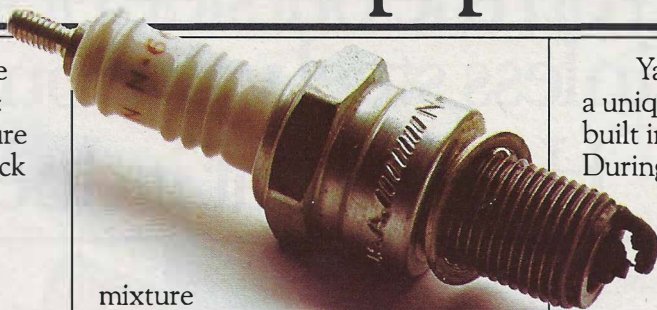
[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



# At low speeds, Torque Induction® helps prevent this.

In a conventional two-stroke engine, something bad happens: At low speeds, the fuel/air mixture in the crankcase tends to blow back through the carburetor. This is because the intake port remains open during most of the piston's downstroke.

As a result of this "blow-back" effect, conventional two-strokes have trouble generating power at low speeds. And, because it changes direction repeatedly, the fuel/air

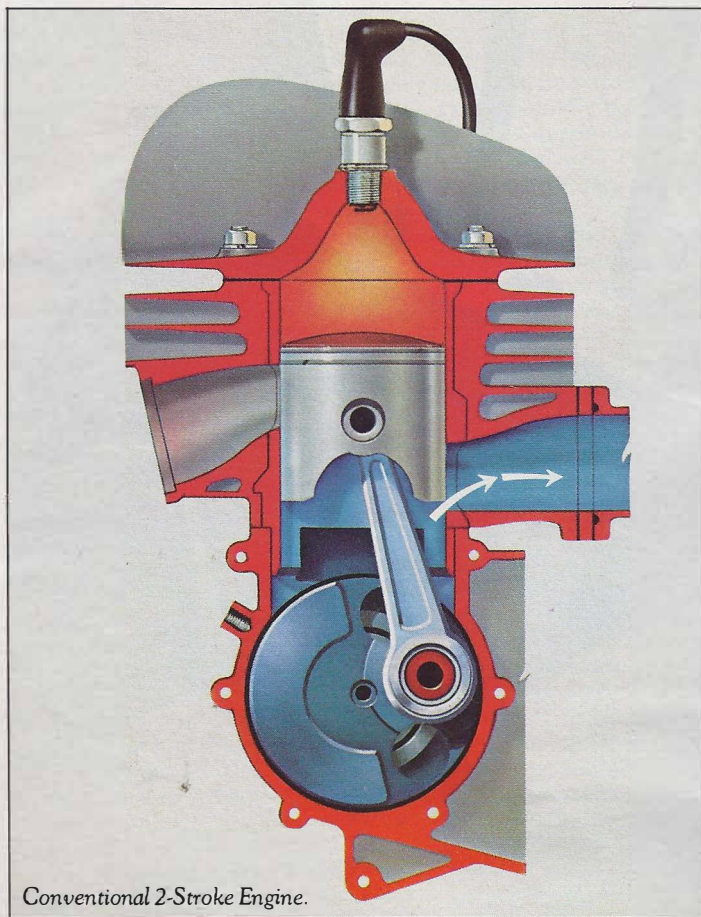


mixture tends to separate, leaving raw fuel in the crankcase. This raw fuel can foul the sparkplug and cause the engine to stall.

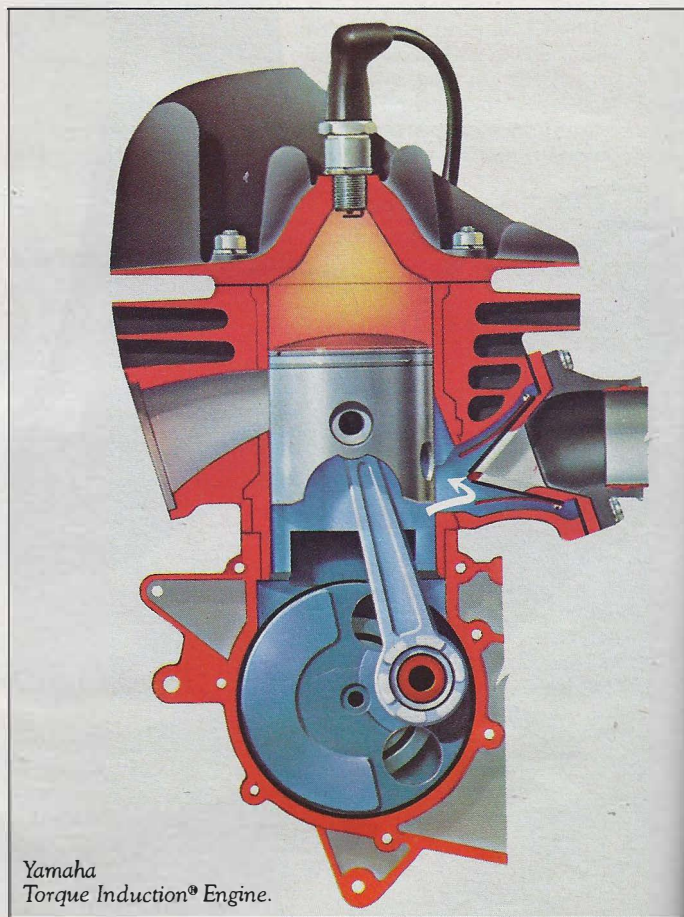
Yamaha two-stroke engines have a unique stainless steel reed valve built into the intake manifold.

During the piston's downstroke, this valve closes to prevent fuel from blowing back into the carburetor. So there's less chance of your sparkplug fouling.

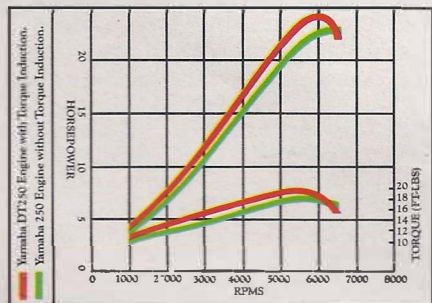
More important, by allowing the engine to breathe better, Torque Induction® increases low-speed horsepower markedly.



Conventional 2-Stroke Engine.



Yamaha Torque Induction® Engine.



On the road, this increase in low-speed horsepower means you don't have to shift down every time the traffic slows down.

Off the road, more low-speed horsepower makes it easier to lug the engine. This helps maintain more constant traction. More low-speed horsepower also means you can ride a Yamaha through mud or loose sand

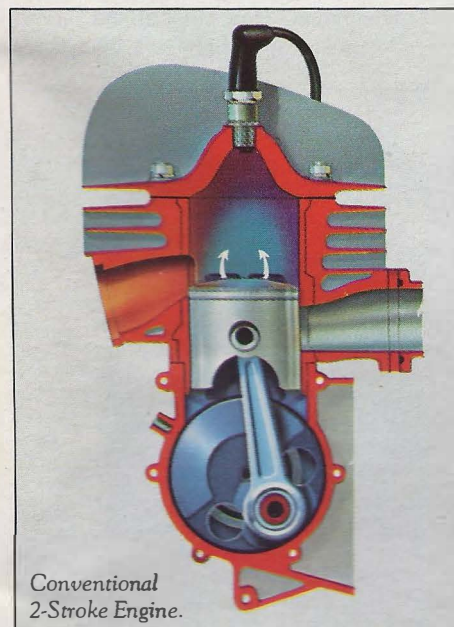
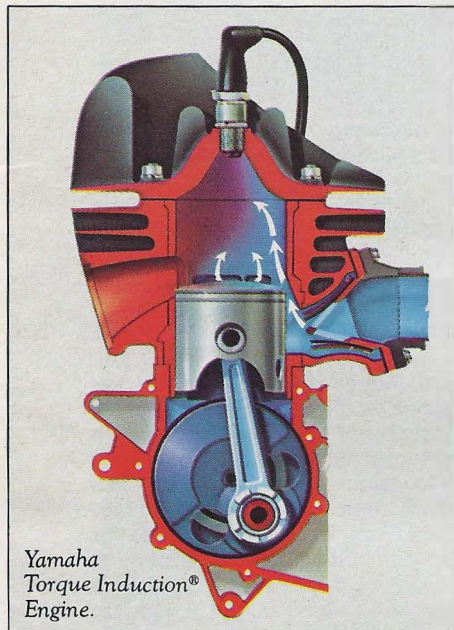
with much less chance of the engine loading up or stalling.





# At high speeds, Torque Induction® helps prevent this.

Conventional two-stroke engines have another problem: Burned exhaust gases have to leave the cylinder at the same time as a fresh charge of fuel/air mixture is entering through the transfer ports. At very high engine speeds, this interchange of gases becomes less efficient. Burned gases are not completely expelled from the cylinder. As a result, the engine doesn't get a full "gulp" of fresh fuel/air mixture. Power drops off.



This incomplete exchange of exhaust gases creates another problem: Heat. (At high speeds, the temperature within the combustion chamber can reach 1200° Fahrenheit.) Without the cooling effect of a complete charge of fuel/air mixture, this temperature can rise to the point where the engine seizes. Or the piston crown actually melts.

Torque Induction® helps keep Yamaha two-strokes breathing efficiently at high speeds. As the piston descends, a unique "sixth port" shoots an extra charge of fuel/air mixture directly up into the cylinder. This gives the engine the extra fuel/air mixture it needs at high speeds. More important, this charge is angled to help sweep the cylinder of exhaust gases. The result is an engine which generates more power at high speeds. And runs cooler.

A natural question is: If Torque Induction® is so good,

why don't other manufacturers use it, too? A lot of them do. On their factory team motocrossers. But only one small European manufacturer has this improved induction system on its production motocrossers. Meanwhile, Torque Induction® is standard equipment on *all* Yamaha two-strokes. Including Yamaha street/trail bikes, like the DT250 shown here.

If you're waiting for other manufacturers to follow Yamaha's lead,



This manufacturer has a Torque Induction® type reed valve on his factory motocrosser. But not on his production bikes.

don't hold your breath. Because putting Torque Induction® on your bikes involves more than installing a reed valve. You also have to design new carburetors, a new type of intake manifold, a new type of cylinder, a new type of piston . . . well, by now the other manufacturers are so far behind, they probably figure there's no sense trying to catch up.



## When you know how they're built, you'll buy a Yamaha.