

The Great Debate: Two Stroke vs. Four

The battle for supremacy between two stroke and four stroke quads is likely to rage on forever, except for outside factors that may end this age old debate; it is very likely that upcoming legislation could end production of two stroke engines, making it impossible to get a new two stroke quad. So if you've ever considered getting a two stroke quad, the clock is ticking.

Mechanically the difference between a two stroke and four stroke lies in how often the spark plugs fire. In a two stroke, it fires once with every revolution of the cam, while a four stroke only fires the plugs every other revolution of the cam. With everything being equal, a two stroke will have twice as many combustions as a four stroke, which causes it to produce much more energy with the same size engine. While this may make a two stroke sound like an obvious choice, there are several drawbacks to the design and performance characteristics of two stroke ATV engines.

The extra energy and heat produced by a two stroke requires oil to be added to the gas to keep the engine properly lubricated. Because oil is put in the combustion chamber, two stroke engines smoke a lot, which is the reason for the imminent ban on them. One side effect of the impressive power that two stroke engines produce is that the top end of the engine must be rebuilt somewhat frequently, depending on how hard the engine is pushed. Although the rebuild is not terribly expensive, it must be done periodically to avoid rebuilding the entire engine.

For many riders the constant maintenance is worth the performance they get out of their two stroke engine, but the accessibility of this power may be prohibitive for some riders, riding styles, and terrain. In order to tap into the power of a two stroke engine, you have to keep the throttle close to wide open to stay in the power band. Although some models are better than others, some stock two strokes lack real power on the low or midrange. In the hands of an experienced rider, a two stroke is an amazing machine, but in certain scenarios, you can lose all your power by making a necessary up shift or slowing down without a hard down shift. However, their explosive power makes two strokes the engine of choice for many racers, especially in racing disciplines that require frequent jumps and quick acceleration out of turns, such as Motocross.

As far as typically maintenance, most four stroke quads require relatively little attention. Spark plugs and oil changes are always necessary, but you do not need to rebuild the engine on a regular basis. However, many riders complain of the high cost of rebuilding four stroke engines when necessary, but

a four stroke engine should hold up longer than a two stroke if it is rode properly. If you keep a four stroke high in the rpm range all the time, you are asking for trouble. Although four strokes do not possess the characteristic break-away acceleration of a two stroke engine, they have access to power through a larger rpm range, which eliminates the need to have the throttle wide open all the time. Access to power in the low and midrange allows for a much more leisurely riding experience, or the ability to dive into deep mud and come out the other side. Because a four stroke has power on the low end, it has a much easier time freeing itself from deep mud, while a two stroke is usually doomed if it comes to a stop in mud. Four strokes, in many cases, have a higher top speed than two strokes, but will take much longer to get to their top speed. Four strokes have improved a lot over the years, with some many dominant racing quads being propelled by four stroke engines. However, the Honda 250R, a classic two-stroke quad, is still taking podium spots over ten years after it began production.

For the most part, two stroke engines are better suited for light sport quads and four strokes, which produce most of their power on the low end, are more suited for heavier quads made for mud, rocks, and work applications. The debate between two stroke and four stroke engines is not likely to end soon, but production of two stroke engines may. If you prefer high speed, airborne, adrenaline heavy riding and you don't mind spending some time turning a wrench, you may want to get your hand on a two stroke quad while you still can.

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