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LAT PLANE CRANKSHAFT

The flat plane crankshaft isn't a new technology as it has been used in V8 engines all the way to the start of the automotive industry.

In modern times flat plane crankshaft is frequently found on Italian exotics racing cars.

The flat plane crankshaft gets its name from the way it looks. The same can be said about the cross plane crankshaft.

Like most technologies, the flat plane cranks have some upsides and some downsides.

Benefits include higher RPM, better tuning efficiency, weight and sound.

Downsides include higher NVH or noise vibration, harshness and reduced engine life.

A lot of the benefits of the flat plane crankshaft come from the engine's firing order.

A flat plane v8 is essentially two built-in four-cylinder engines that have been joined to the crankshaft. Given this configuration it's very easy to go back and forth between each group of cylinders.

The exhaust pulses that go out of each cylinder on the flat plane crankshaft engine are timed almost perfectly. Each pulse comes down the header to create a small vacuum behind it.

One of the benefits of an even firing order is that all cylinders behave the same. With the traditional cross plane v8 you'll have some cylinders that underperform others.

The biggest downside of the FPCE is NVH. The presence of cylinders firing every 90 degrees, rather than every 180 degrees, provides a smoother overall engine cycle.

The Roughness and vibration associated with flat cranks increases with increasing capacity of the engine. In other words, the bigger the engine, the more likely you are to have problems.

Typically, a flat plane crankshaft will require smaller counterweights which reduce the overall weight of the crankshaft and provide quicker revving.