

Both of these bikes have aerodynamic problems caused by the direction their exhaust is pointing. The **Harley** points it's exhaust up, and the **Kawasaki** is it pointing up and to the right...



What's the best way to point the exhaust ??

Here's an interesting photo of the correct 5 degree pipe angle

(Featuring Schmidastic's famous passenger....)

The Idea

The main idea is that if you project back about 20 ft. / 6 Meters the exhaust should point to the exact center of the aerodynamic form.



In the last issue we learned that this affects the **"Dynamic Aerodynamics"** or how the aerodynamics are affected when the bike is moving with the engine running.

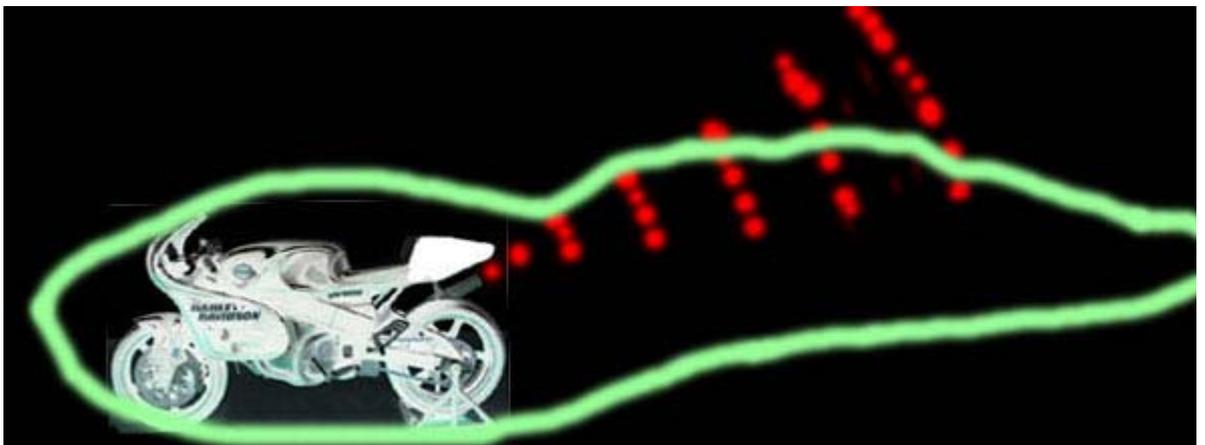
This issue is all about: **"Dynamic Horsepower"**

Which is:

"The Closely Related Problem"

I've been asking about ... !!

More "Invisible" Power Loss !!



Q: Where does the energy that's being used to enlarge & deform the Harley's aerodynamic form come from ??

A: The Engine !!

Just as the exhaust is disrupting the bike's aerodynamics, the aerodynamics problem is costing the engine real horsepower !!!

Since the engine is an air pump, it's using an amazing amount of energy to de-form the aerodynamic wake behind it. The piston has to push the exhaust out against the natural flow of air behind the moving bike.

This is Another Example of Why Speed Isn't Directly Connected to Dyno Readings

The **Harley** & **Kawasaki** superbikes may make "X" amount of power on a dyno, yet their actual

Dynamic Power is progressively reduced as they reach top speed on the racetrack. In the real world, Dynamic Power is all that matters... (unless you're just "bench racing"...) :)

Another Way of Thinking About It ...

Ram Air Induction helps an engine make *more* horsepower as it increases its speed, by forcing positive air pressure into the engine.

At the back of the bike, when the exhaust is pointing the wrong direction, the engine will make *less* power as it increases speed !!
It's a type of "Reverse Ram Air"

Taking It One Step Further:

By purposely pointing the exhaust gasses *exactly* into the center of the aerodynamic draft created by the bike, the exhaust will be sucked out, and the engine doesn't have to work as hard.
It's "free" power.