

A Brief Discussion About Motorcycle Dynamics

“But I Steered Left!!!!!”

History of Jerry Hilborn



My Projects/Interests

1985 Sportster



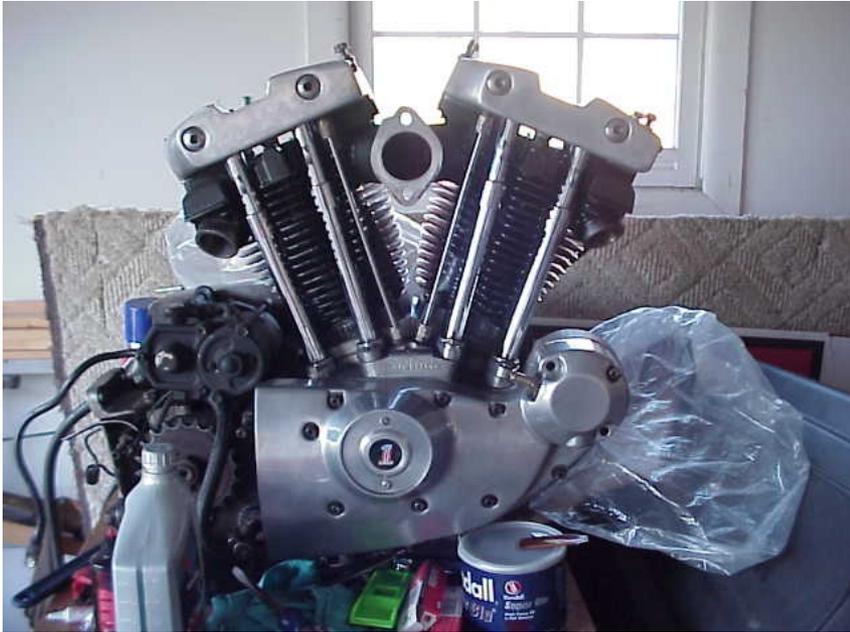
From this...



And this...



To This!



Addressing the Oil Leak



Current Project 1940 Indian Sport Scout



Hopefully Someday



Not Possible Without My Supportive Wife...



What is a Motorcycle?



Dictionary Definition:

mo·tor·cy·cle

'mōtər, sīkəl/

noun

noun: **motorcycle**; plural noun: **motorcycles**

1. a two-wheeled vehicle that is powered by a motor and has no pedals

Also Defined by Statute

Michigan Vehicle Code:

257.31 “Motorcycle” defined.

“Motorcycle” means every motor vehicle having a saddle or seat for the use of the rider and designed to travel on not more than 3 wheels in contact with the ground but excluding a tractor.

History: 1949, Act 300, Eff. Sept. 23, 1949

I Like This One...

Motorcycles are articulated, inline vehicles with a single track, that lack inherent static balance.

(They tip over if not held up by rider or kickstand when stationary)

Friction, Passenger Vehicle

Tire Marks, Delta County Style



Critical Speed Scuff



Other Passenger Vehicle Methodology

Damage Profiles



EDR



Impacts & Friction



Wheelbase Deformation

Bent Forks



“Shortened”



“I’d Buy That...”



Analysis of Road Rash



Motorcycle Dynamics

High Side

Airborne

Motorcycle is on center line. When the operator releases the rear brake, the rear tire regains rotational traction, causing the operator to be violently ejected--high-sided--in the direction the motorcycle was initially traveling and skidding. High-siding can occur either in a straight or curved section of road under hard application of the rear brake with no front-brake use.

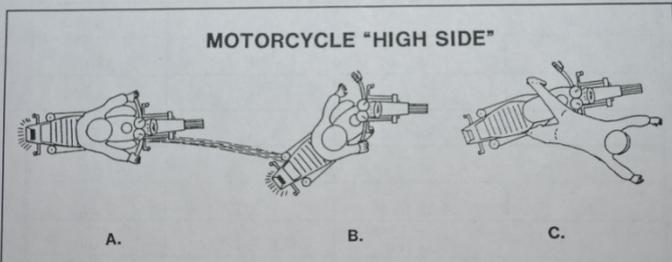


Figure 7-30 Motorcycle *high-side*

In 1985, the author used two different motorcycles in tests conducted on

MOTORCYCLE ACCIDENT INVESTIGATION

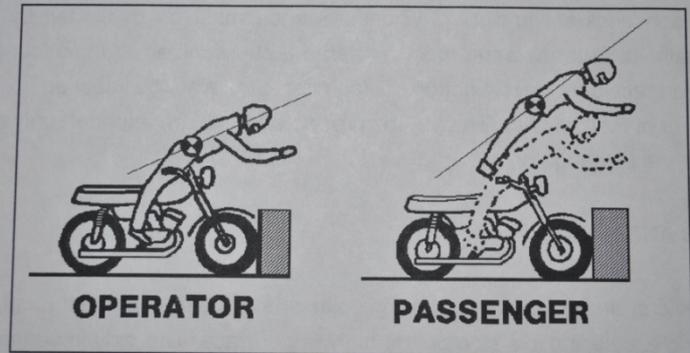


Figure 7-24 Departure of operator and passenger
The operator acts as a ramp for the passenger.

Courtesy of Al Baxter

Let's Talk About Countersteering...

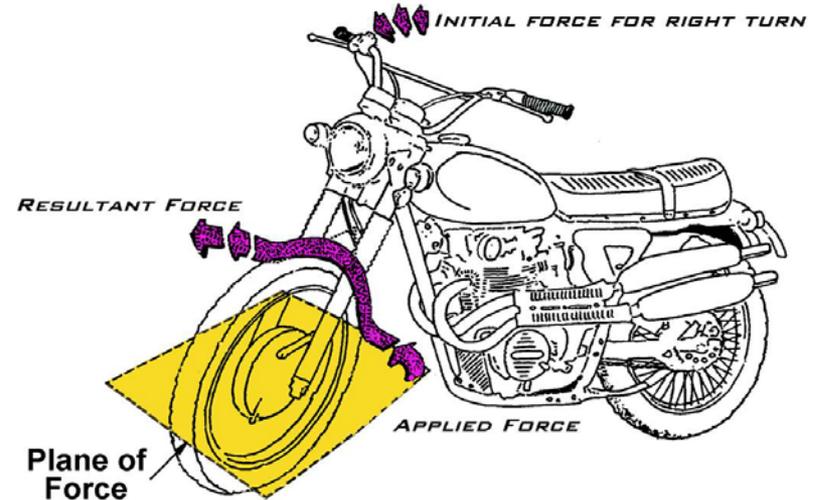
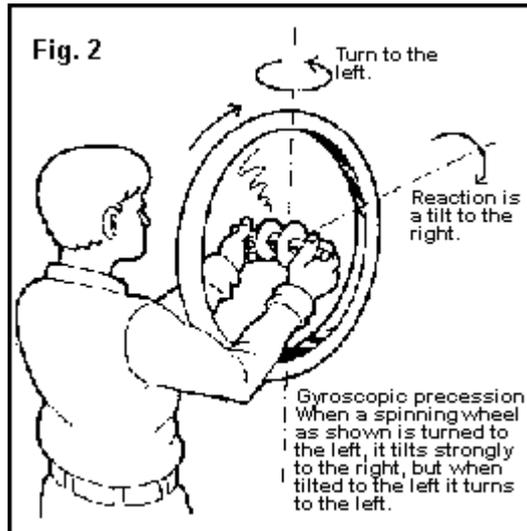
But I turned left!



And went right!



Let's Talk About Gyroscopic Precession



Time For a Demonstration!



We Don't Need No Stinkin' Brakes...



Crash Examined



My Suggestion?

Honor him by taking these...



...and put them here...



Questions?



THANK YOU!!

