

Differential Steering (Conversion System)

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The conversion system is a system that allows the driver to switch between two steering systems "Ackermann, & Differential Steering" depending on the driver needs in turning the vehicle.

The Ackermann Steering is used in the normal driving, because this system provides the advantages of flexible steering function without skidding at the road. The Differential Steering job is only to let the vehicle to turn around its vertical axis, in a very small area when the driver wants to rotate the vehicle in the opposite direction, or in a parking operation. By using double Differential with two inputs: The Drive Input, and The Steering Input, which are controlled mechanically by the engine and a differential gears set, it can synchronize between the two systems at any time.

This project was designed to be controlled mechanically to provide a clear vision about the idea, while the next step of this project is to design its control using a hydro-electric control system

The basics of the Differential Steering works are based on the same basics of the Tracked Vehicles, except that the car uses wheels instead of the Tracks. By considering the friction forces and traction theory when uses the Wheels instead of Tracks, this makes it possible to use.

This conversion system can be applied in automobiles manufacturing without causing any unwanted problems to the vehicle functionality.

In other word the Differential Steering Mechanism is only an advanced system that uses some additional components and control units to enhance the driving comfortability.