

SpeedPod

INSTALLATION/SOFTWARE/USAGE

Q: Question

How does radius setting affect the measurement of the minimum closing speed with SpeedPod?

A: Answer

Technology

The principle of SpeedPod is based on gyroscope technology. The gauge measures in essence angular speed in degrees per second. As the hinged door is a rotation, this approach is an accurate representation of the movement. Especially as this measured value would be identical for any point on the door.



Figure 1: Different mounting examples with identical measurements

This approach turns into an important advantage as the measurement becomes independent from where the user places the SpeedPod on the door.

Linear Speed

It is common to define closing efforts as a linear speed in -for example- meter per second. To convert from angular to linear velocity, the radius is required. This is the distance between the hinge axis and the point of interest.

$$v = \omega R$$

In the profile settings of the SpeedPod the applicable radius of the point can be entered. Popular choices are the door edge, handle, or latch. SpeedPod will report the speed at that point even if it is not visible or accessible. A consequence of this method is that each door will have its own specific profile based on the physical dimensions.

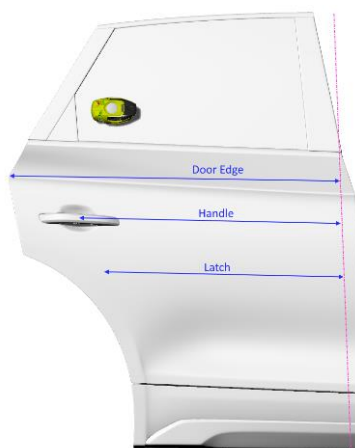


Figure 2: Radius Options

$$v_{DoorEdge} = \omega R_{DoorEdge} > v_{Handle} = \omega R_{Handle} > v_{Latch} = \omega R_{Latch}$$

When SpeedPod is used in combination with PLS management software, the software will automatically communicate the correct profile and radius to the gauge.

In case the gauge is used as stand-alone without management software, the user could opt for a standardized radius. This method will use a constant radius of 1m for all measurements.

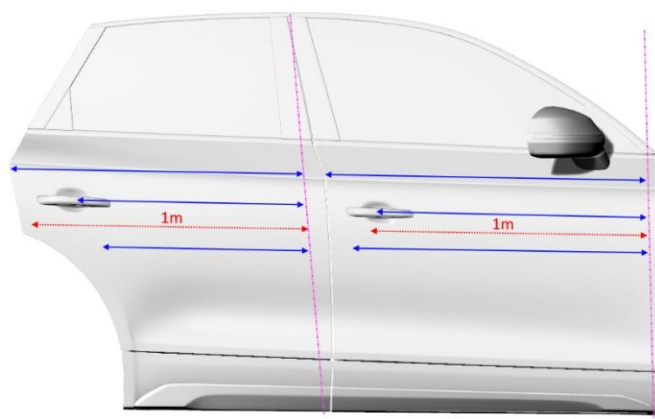


Figure 3: Standard Radius vs Other Conventions

$$v_{R1.0} = \omega 1.0 = \omega$$



Between the two methods, the difference in reported speed is a multiplication factor equal to the radius in meter.

$$v_{Handle} = v_{R1.0} R_{Handle}$$

Tolerances

When current tolerances are defined for a specific radius, the numbers will have to be converted to a 1m radius to maintain the same criteria. This is done using the radius as the denominator.

$$v_{Upper\ Tolerance\ R1.0} = \frac{v_{Upper\ Tolerance}}{R_{Handle}}$$
$$v_{Lower\ Tolerance\ R1.0} = \frac{v_{Lower\ Tolerance}}{R_{Handle}}$$

Now SpeedPod can be used in *EZMode* for all doors, without the need for profile swapping between different doors.