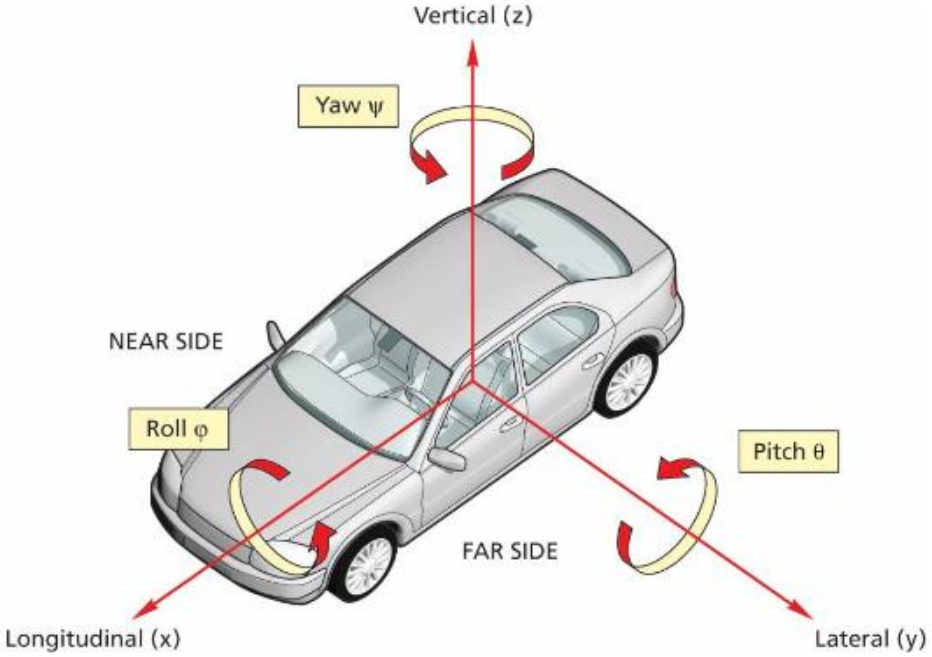
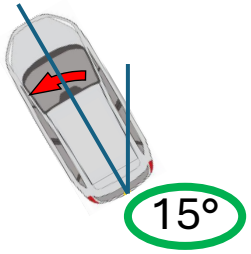
Crash Avoidance Frontal Collisions – Version 1.0 – Implement. Jan. 2025

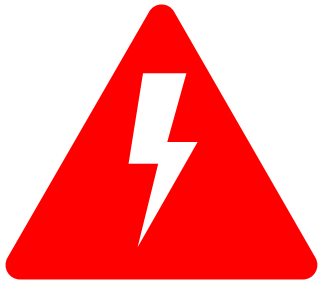
https://www.euroncap.com/media/85851/euro-ncap-protocol-crash-avoidance-frontal-collisions-v10.pdf



1.1 Reference system *Use the convention specified in ISO 8855:2011, with the origin at the most forward point on the centreline of the VUT for dynamic data measurements as shown in Figure …*

Definition of rotation:
The default coordinate system is right-handed. Positive rotation is **counterclockwise about the axis of rotation**.



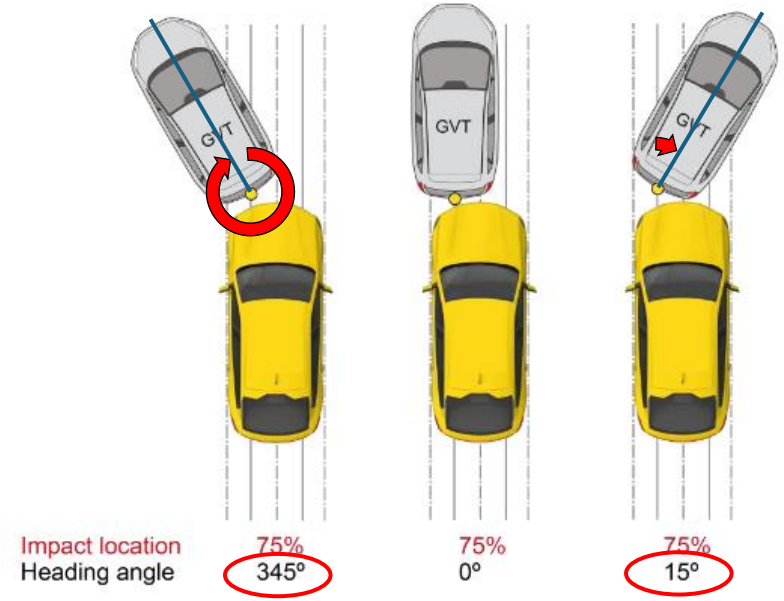


5.2 .1 Robustness Layers → 5.2 .1 .3 Verification Tests Conditions

Trajectory/ Heading	CCRs, CMRs CPNA, CPFA, CBNA, CBFA, CPNCO, CBNAO	±20° (rotation around the impact point)	Same or better than Standard Range

→ No definition for rotation

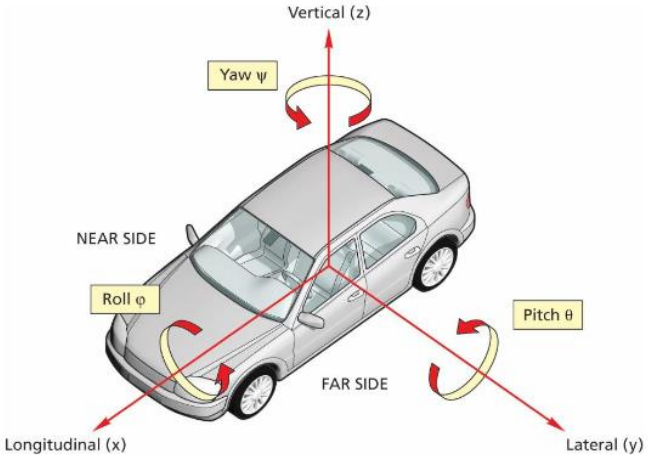
→ Definition by example:
1.5.2 Car-to-car Rear + Heading
Rotation by target reference point, …

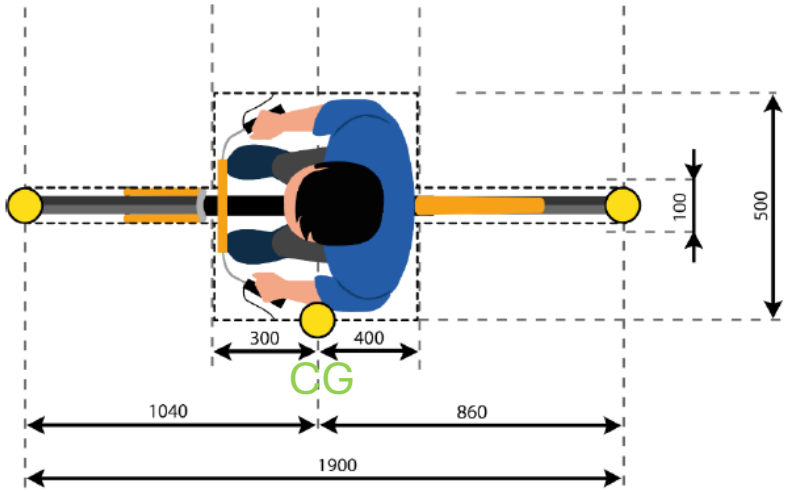


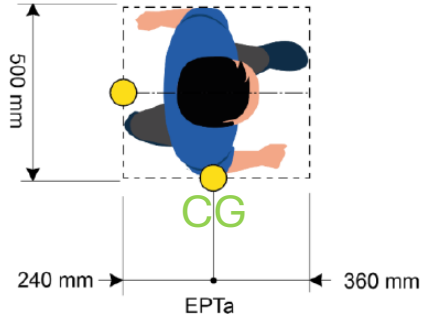
→ **Rotation in example is wrong in protocol**
must be: 15° 0° 345°

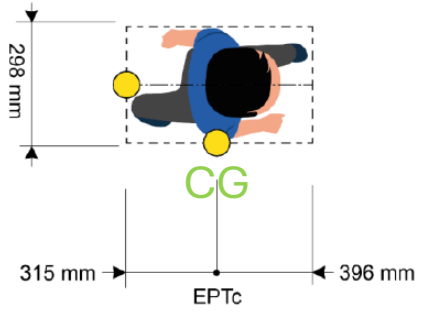
.Striking point TOB X	[%] from right/end (with or without %?!?)
Impact side test object X	FR, RE, NS, FS, CG, RI, LE
.Heading angle TOB X	[°] from moving direction main TOB (eg. VUT)
.Test function side TOB X	FR, RE, NS, FS, LE, RI

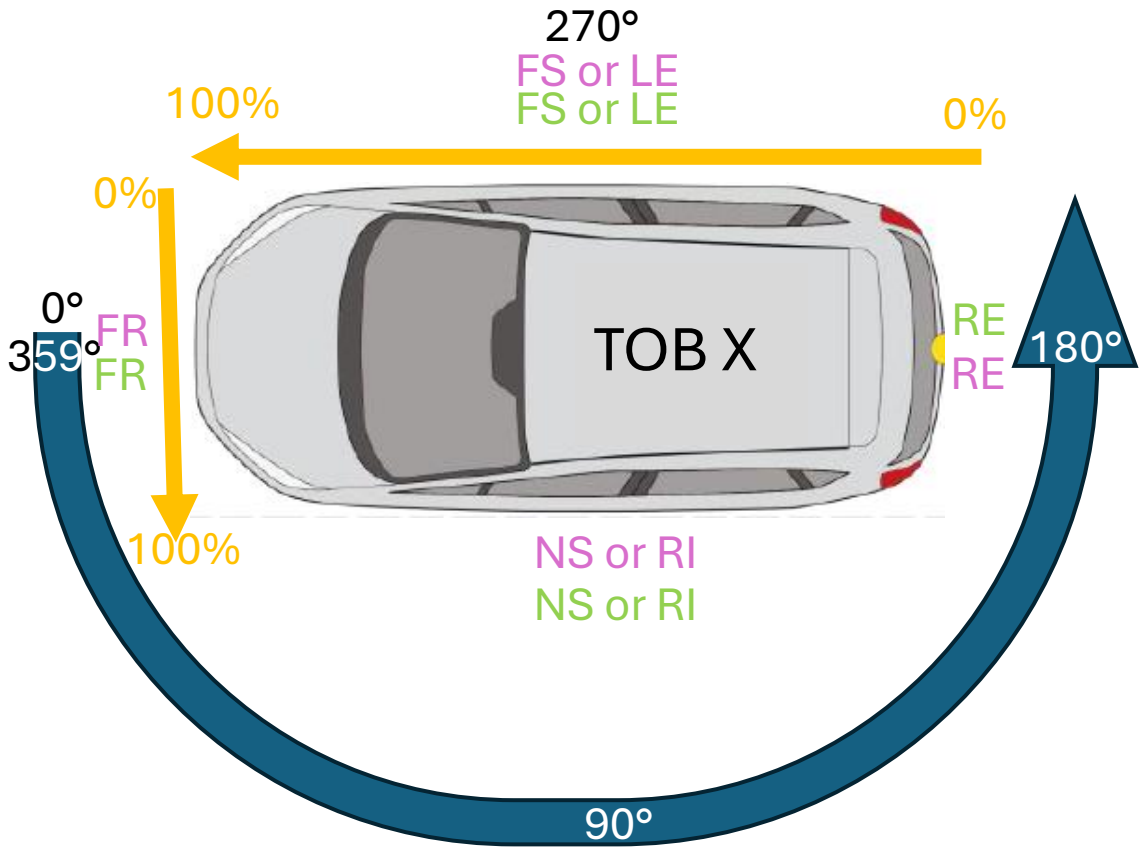
Definition of rotation:
The default coordinate system is right-handed. Positive rotation is **counterclockwise about the axis of rotation**.





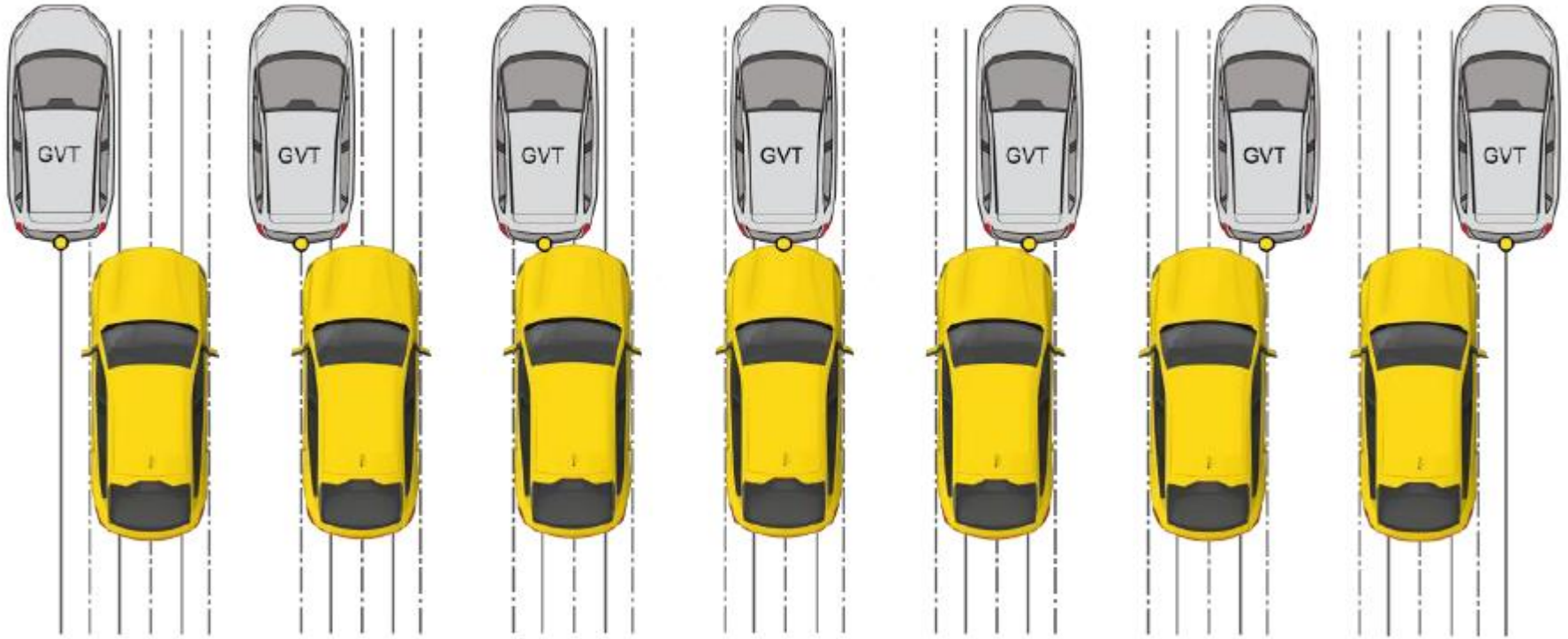






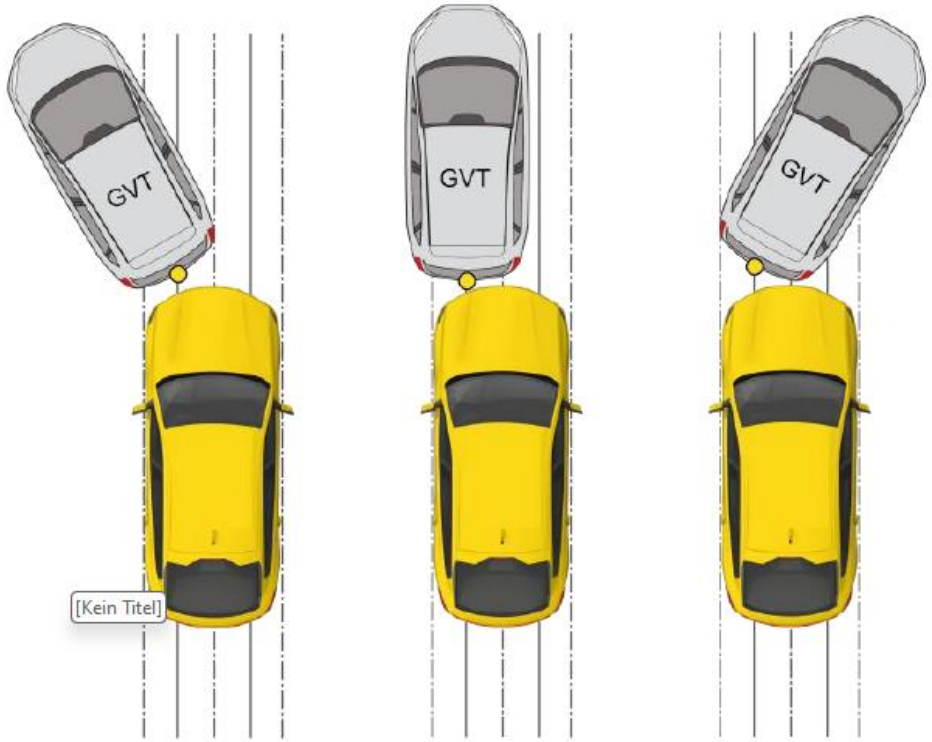
Car-To-Car Rear

VUT = TOB 1
GVT = TOB 2



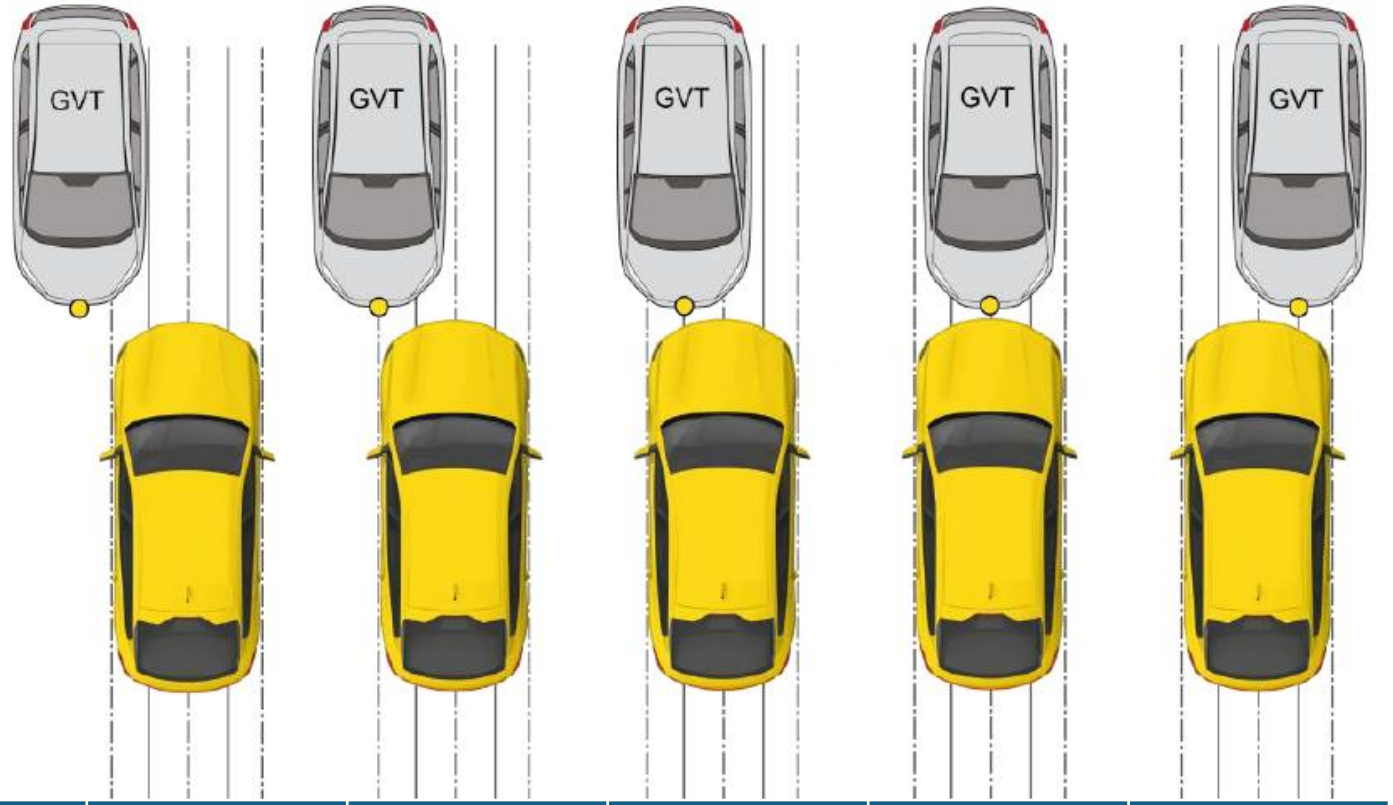
.Striking point TOB 1	125%	100%	75%	50%	25%	0%	-25%
Impact side test object 1	FR	FR	FR	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°	0°	0°	0°
.Striking point TOB 2	50%	50%	50%	50%	50%	50%	50%
Impact side test object 2	RE	RE	RE	RE	RE	RE	RE
.Heading angle TOB 2	0°	0°	0°	0°	0°	0°	0°

Car-To-Car Rear + Heading



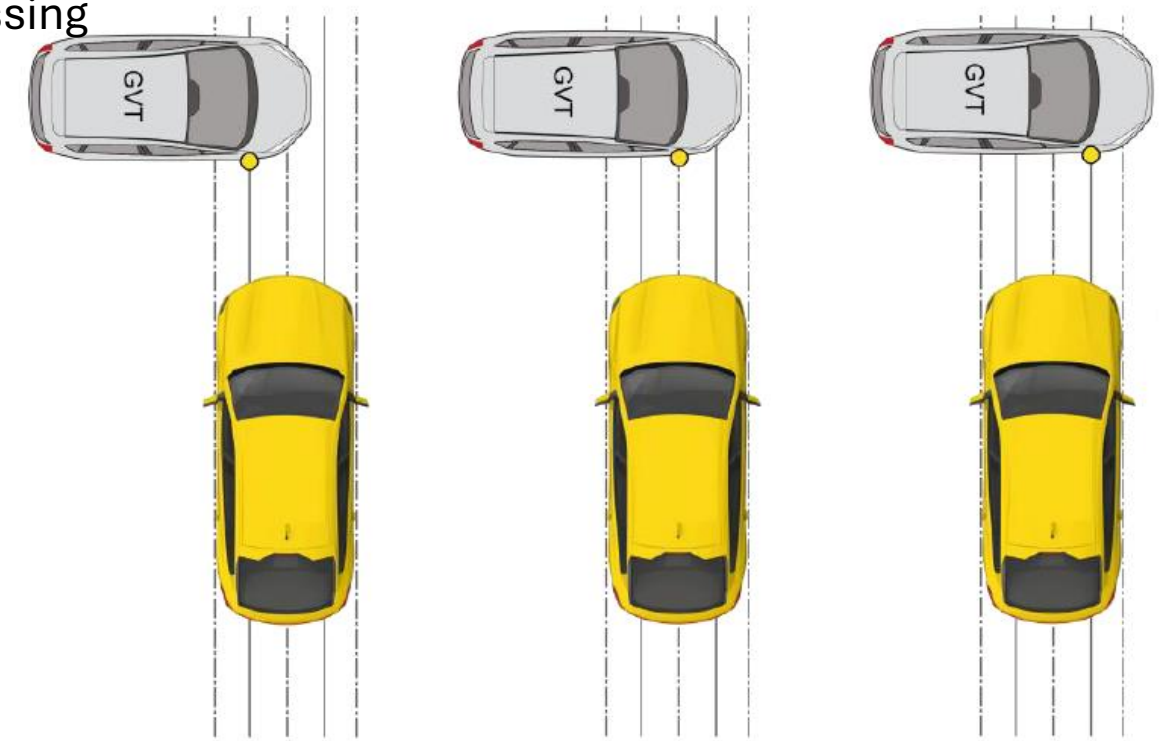
.Striking point TOB 1	75%	75%	75%
Impact side test object 1	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°
.Striking point TOB 2	50%	50%	50%
Impact side test object 2	RE	RE	RE
.Heading angle TOB 2	15°	0°	345°

Car-To-Car Front



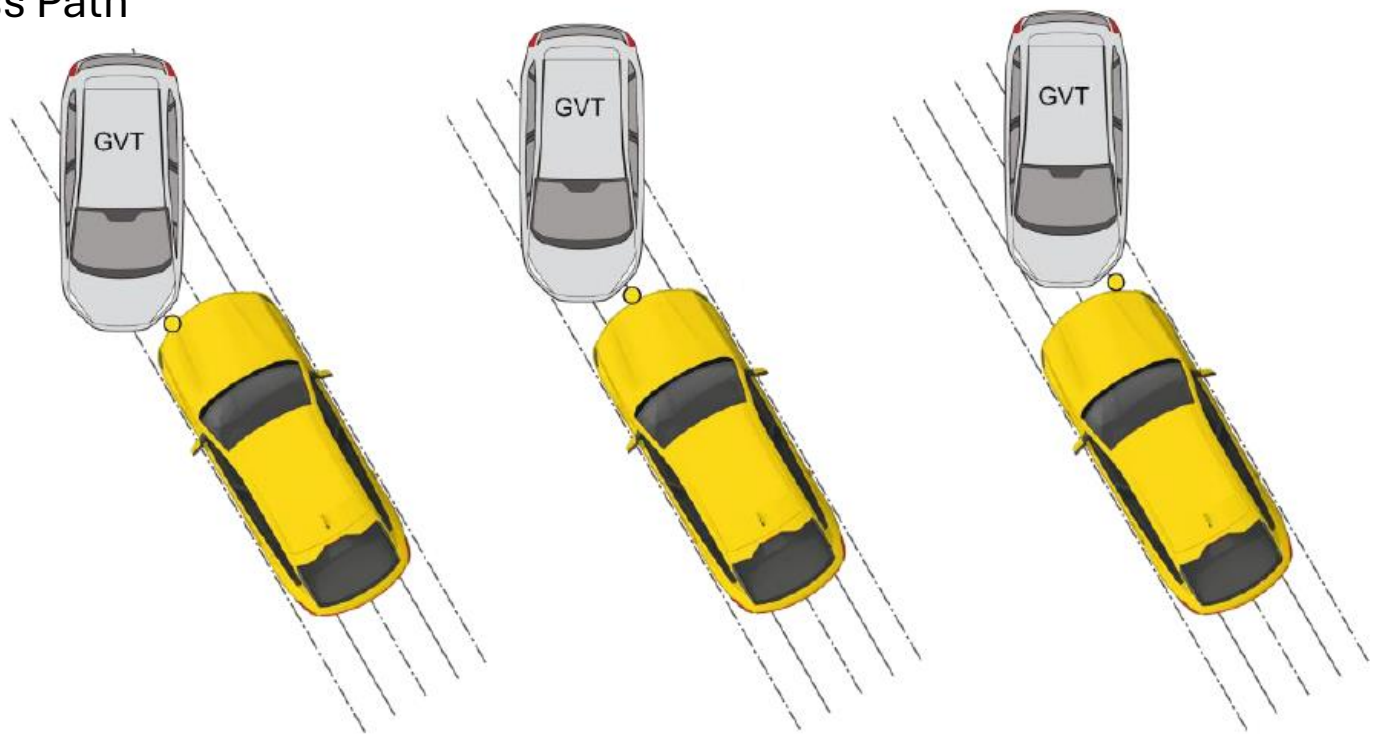
.Striking point TOB 1	125%	100%	75%	50%	25%
Impact side test object 1	FR	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°	0°
.Striking point TOB 2	50%	50%	50%	50%	50%
Impact side test object 2	FR	FR	FR	FR	FR
.Heading angle TOB 2	180°	180°	180°	180°	180°

Car-To-Car Crossing



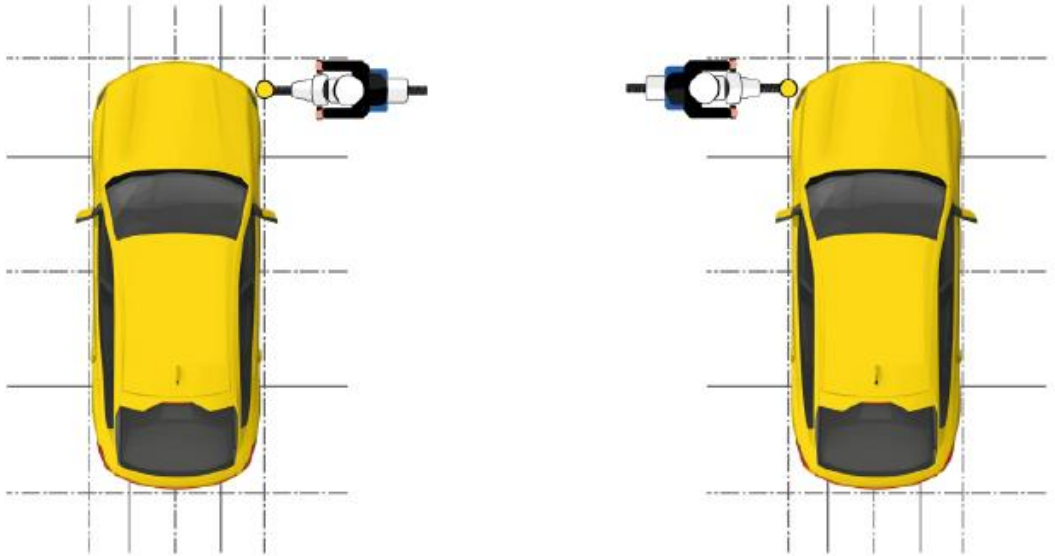
.Striking point TOB 1	75%	50%	25%
Impact side test object 1	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°
.Test function side TOB 1	FS	FS	FS
.Striking point TOB 2	75%	75%	75%
Impact side test object 2	RI	RI	RI
.Heading angle TOB 2	270°	270°	270°

Car-To-Car Turn Accross Path



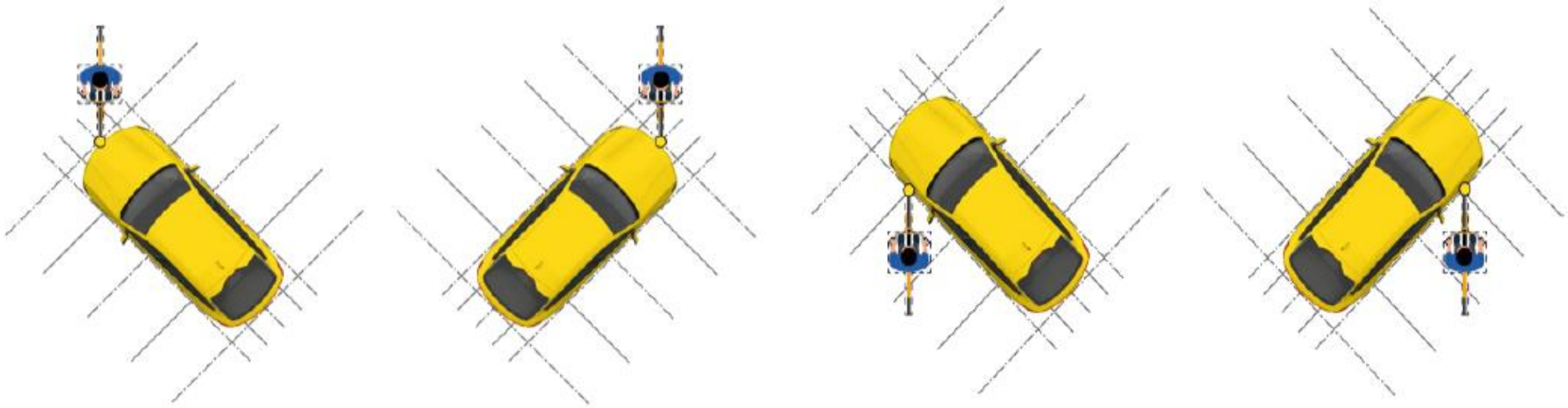
.Striking point TOB 1	75%	50%	25%
Impact side test object 1	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°
.Test function side TOB 1	FS	FS	FS
.Striking point TOB 2	50%	50%	50%
Impact side test object 2	FR	FR	FR
.Heading angle TOB 2	180°	180°	180°

Car-To-PTW Crossing



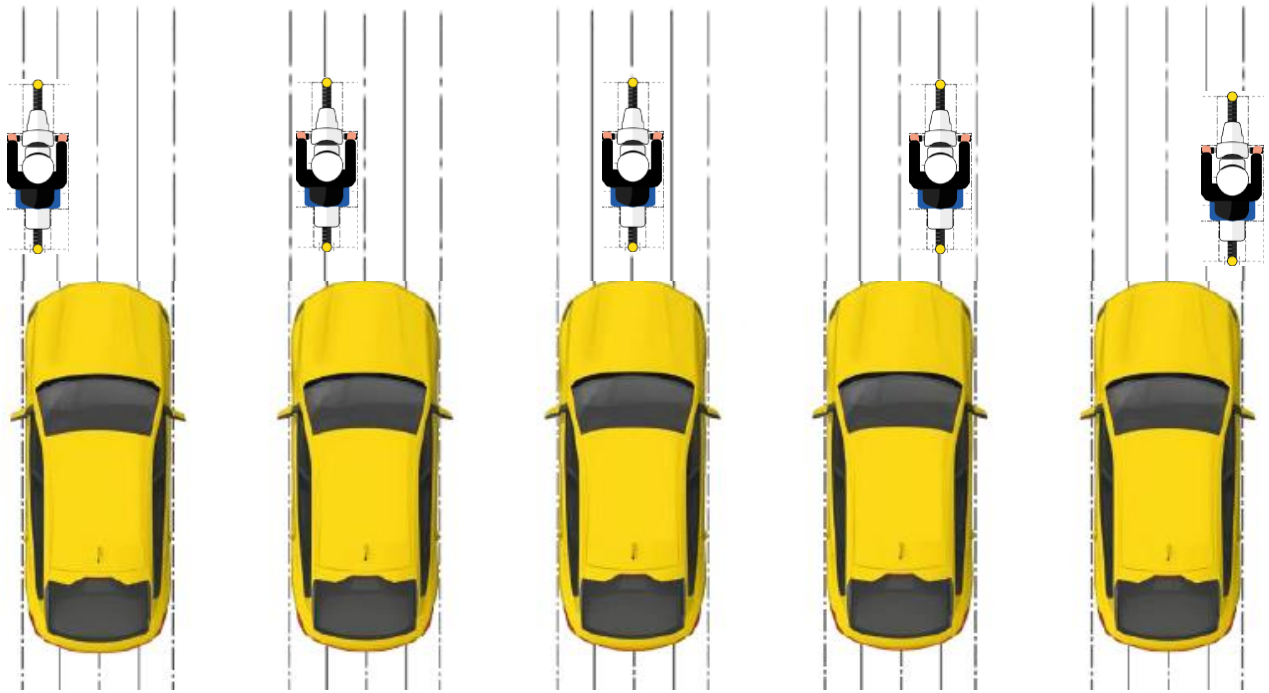
.Striking point TOB 1	90%	90%
Impact side test object 1	NS	FS
.Heading angle TOB 1	0°	0°
.Striking point TOB 2	50%	50%
Impact side test object 2	FR	FR
.Heading angle TOB 2	90°	270°

Car-to-Bicyclist Turning



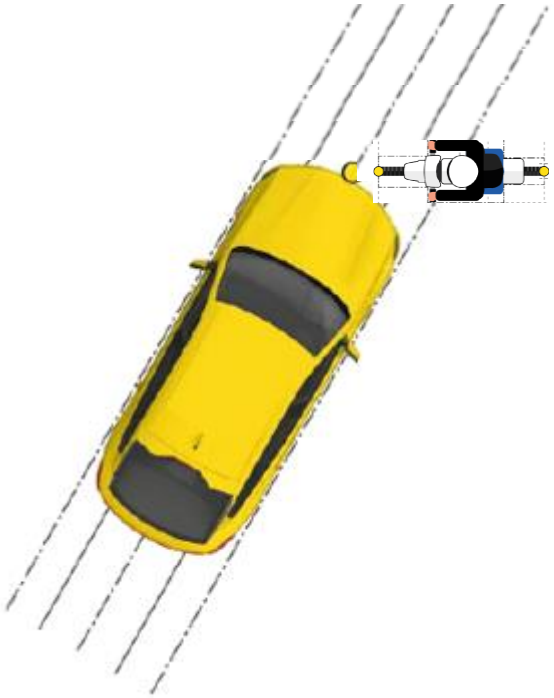
.Striking point TOB 1	100% (should be 50%)	100% (should be 50%)	75%	75%
Impact side test object 1	FR	FR	FS (or LE)	NS (or LE)
.Heading angle TOB 1	0°	0°	0°	0°
.Test function side TOB 1	FR	FR	FS (or RI)	NS (or RI)
.Striking point TOB 2	50%	50%	50%	50%
Impact side test object 2	FR	FR	FR	FR
.Heading angle TOB 2	180°	180°	0°	0°

Car-to-Motorcyclist Rear



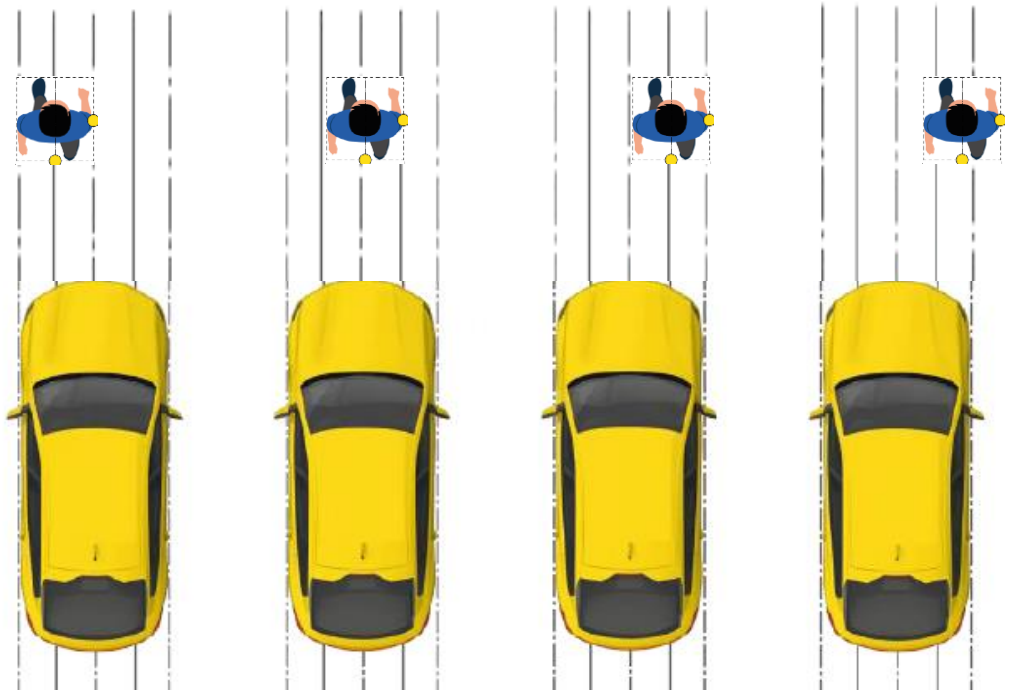
.Striking point TOB 1	90%	75%	50%	25%	10%
Impact side test object 1	FR	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°	0°
.Striking point TOB 2	50%	50%	50%	50%	50%
Impact side test object 2	RE	RE	RE	RE	RE
.Heading angle TOB 2	0°	0°	0°	0°	0°

Car-to-Motorcyclist Front Turn Across Path



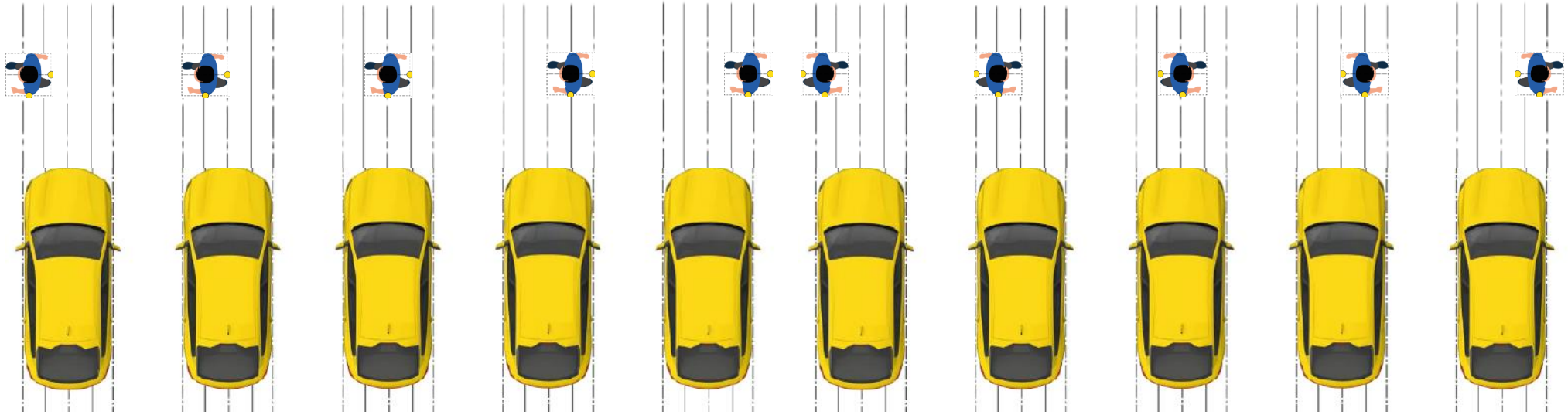
.Striking point TOB 1	50%
Impact side test object 1	FR
.Heading angle TOB 1	0°
.Striking point TOB 2	50%
Impact side test object 2	FR
.Heading angle TOB 2	90°

Car-to-Pedestrian Longitudinal



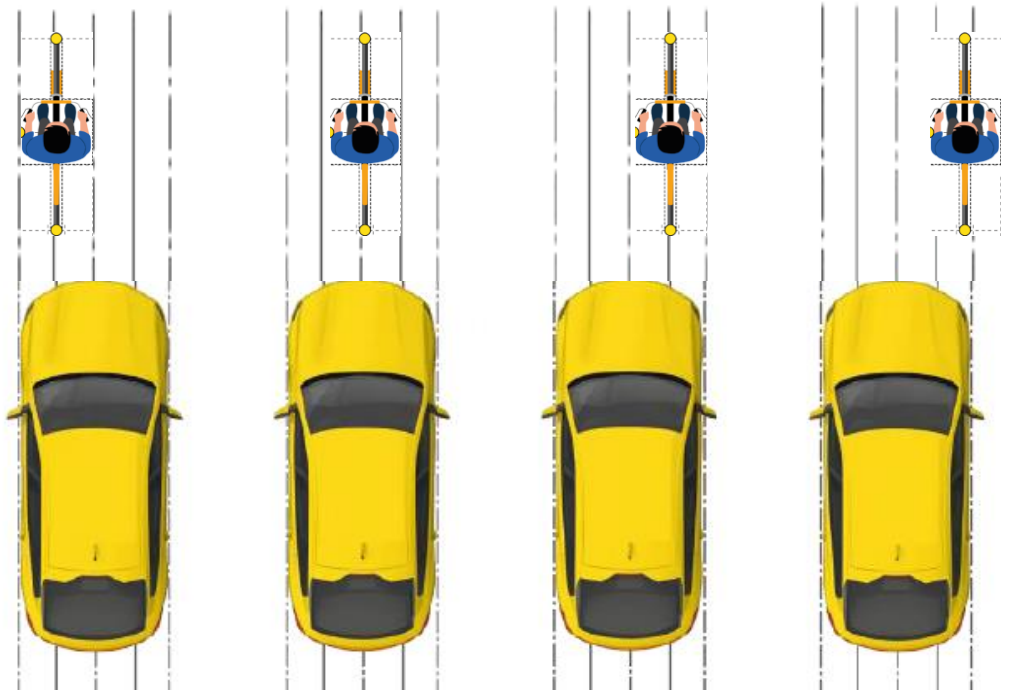
.Striking point TOB 1	75%	50%	25%	10%
Impact side test object 1	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°
.Striking point TOB 2	50%	50%	50%	50%
Impact side test object 2	RE	RE	RE	RE
.Heading angle TOB 2	0°	0°	0°	0°

Car-to-Pedestrian Longitudinal



.Striking point TOB 1	90%	75%	50%	25%	10%	90%	75%	50%	25%	10%
Impact side test object 1	FR	FR	FR	FR	FR	FR	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
.Test function side TOB 1	NS	NS	NS	NS	NS	FS	FS	FS	FS	FS
.Striking point TOB 2	CG	CG	CG	CG	CG	CG	CG	CG	CG	CG
Impact side test object 2	LE	LE	LE	LE	LE	CG	CG	CG	CG	CG
.Heading angle TOB 2	90°	90°	90°	90°	90°	270°	270°	270°	270°	270°

Car-to-Bicyclist Longitudinal



.Striking point TOB 1	75%	50%	25%	10%
Impact side test object 1	FR	FR	FR	FR
.Heading angle TOB 1	0°	0°	0°	0°
.Striking point TOB 2	50%	50%	50%	50%
Impact side test object 2	RE	RE	RE	RE
.Heading angle TOB 2	0°	0°	0°	0°