EURO NCAP

#FORSAFERCARS

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Verification conditions for robustness layers

Crash Avoidance

Technical Bulletin CA 002

Implementation 1st January 2026

PREFACE

DISCLAIMER: Euro NCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the technical decisions taken by the organisation. In the unlikely event that this protocol contains a typographical error or any other inaccuracy, Euro NCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

CONTENTS

INTRODUCTION

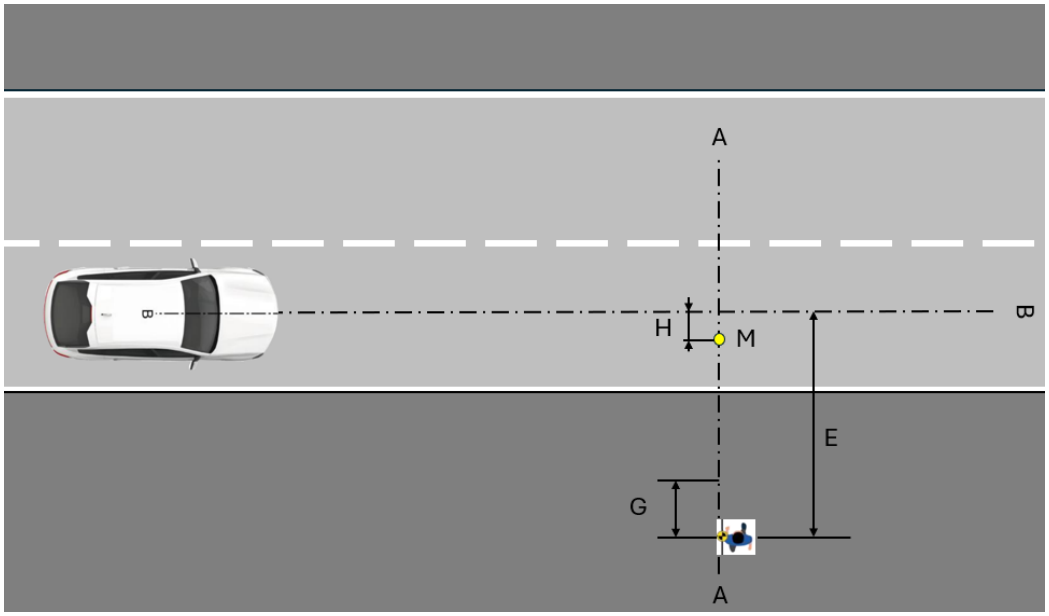
This document outlines the verification conditions that must be followed by the Test Laboratory at the time of verifying the claimed performance across the robustness layers contained in the Euro NCAP Crash Avoidance Frontal Collisions and Lane Departure Collisions assessment.

1 FRONTAL COLLISIONS

1.1 Infrastructure/Clutter (Car-to-Pedestrian & Car-to-Bicyclist)

1.1.1 CPNA – 25% with variation of starting position

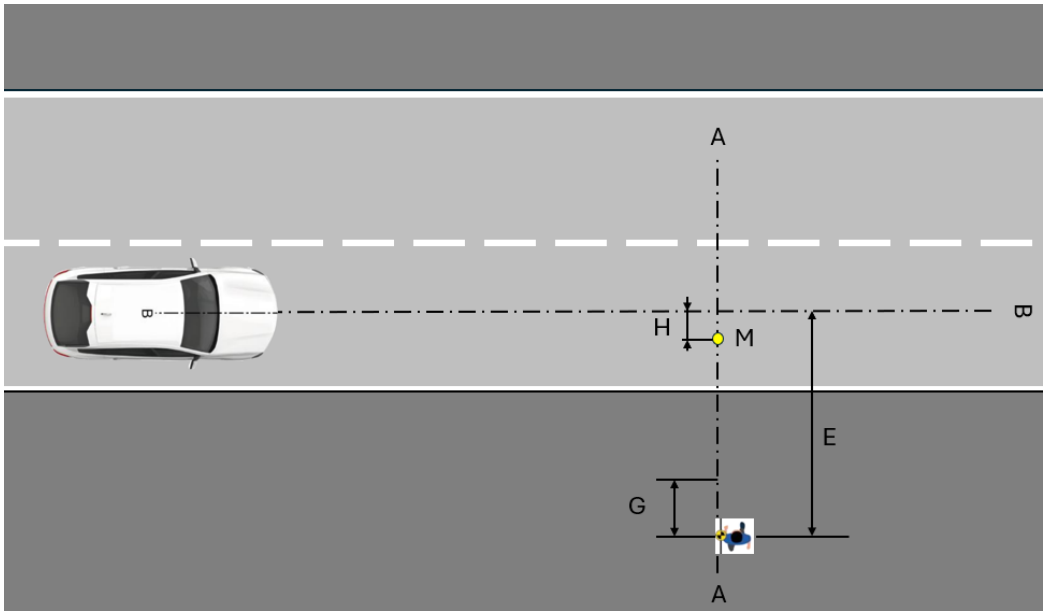
Standard CPNA-25% with variation of starting point E for the pedestrian.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m -25%
G	Dummy acceleration distance (walking)	1.0m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.2 CPNA – 25% with variation of target speed

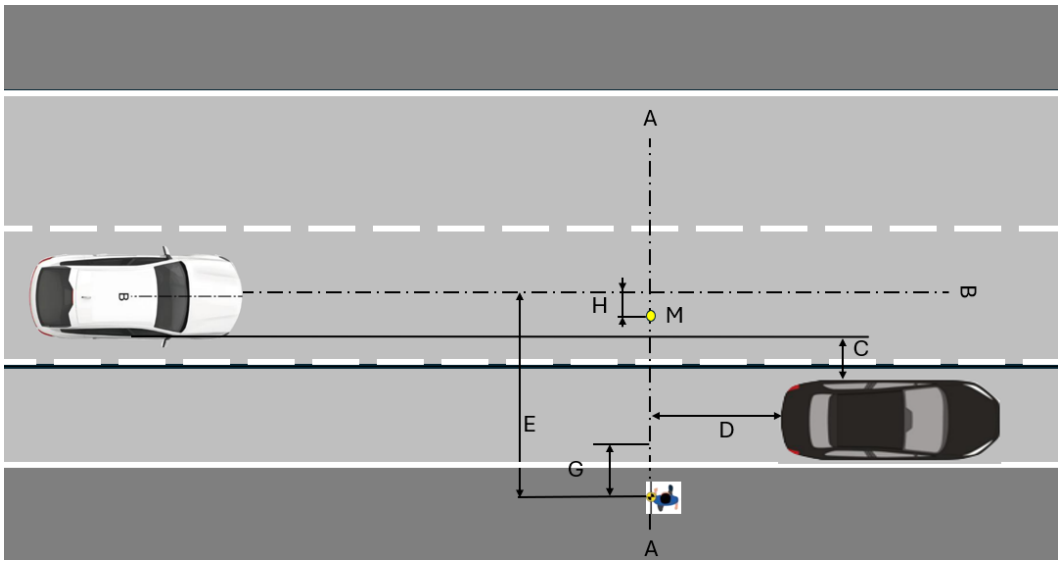
Standard CPNA-25% with pedestrian speed of 8km/h.



Axes		Values
AA	Trajectory of pedestrian dummy H-point	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.3 CPNA – 25% with parked vehicle behind

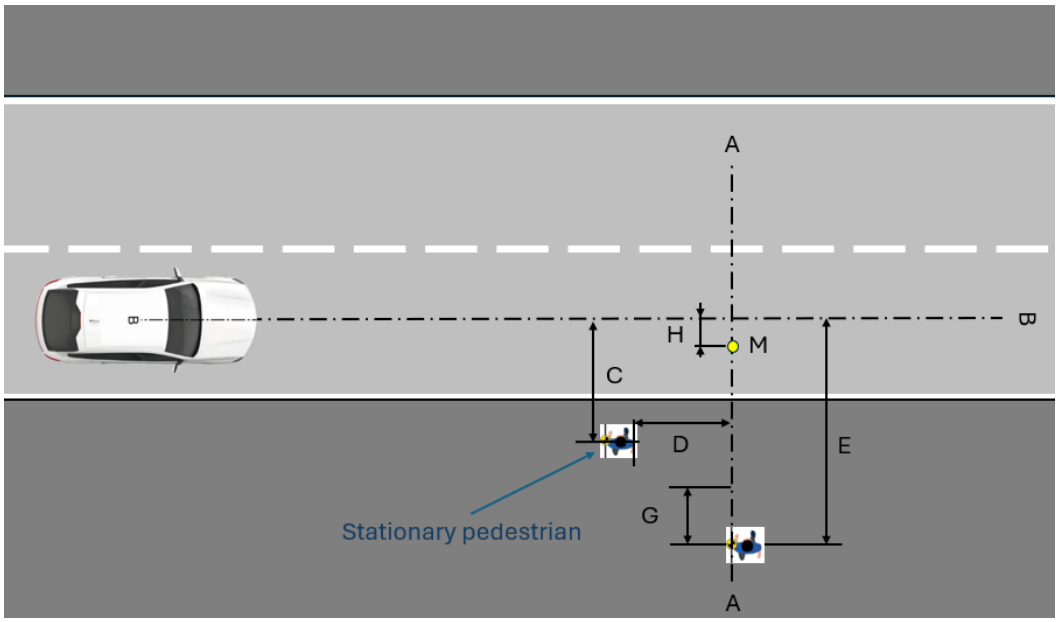
Standard CPNA-25% with dark SUV parked after pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Distance between Vehicle under test and the parked vehicle	1.0m
D	Mid rear of parked vehicle to pedestrian path	1.5 - 2.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.4 CPNA – 25% with stationary pedestrian in front of pedestrian path

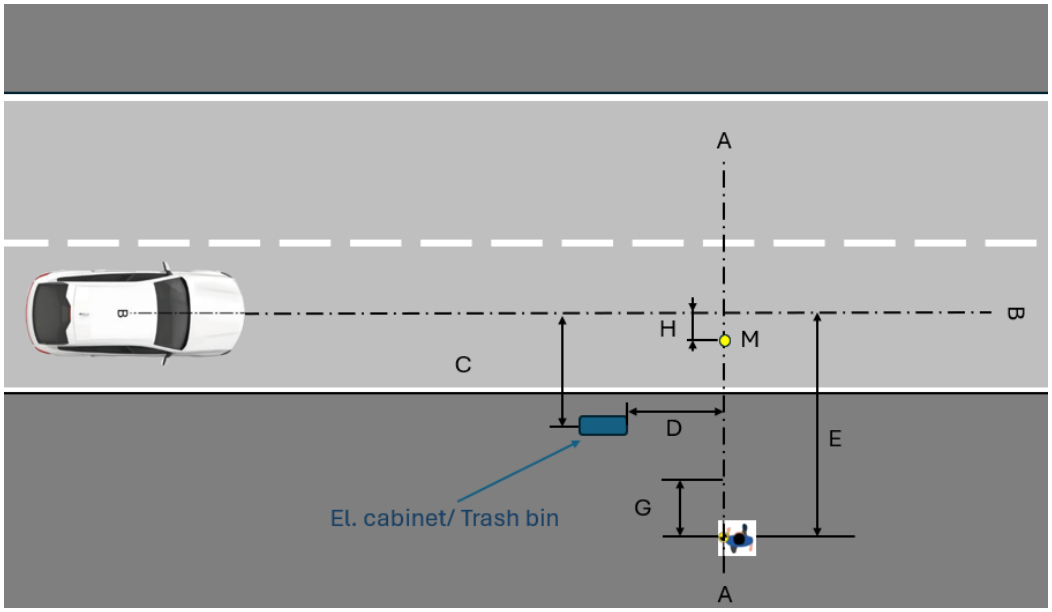
Standard CPNA-25% with stationary pedestrian standing before walking pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Stationary dummy H-point to VUT centreline BB	2.5m
D	Stationary dummy right shoulder to pedestrian path AA	1.0-1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.5 CPNA – 25% with Electrical cabinet / Trash bin in front of pedestrian path

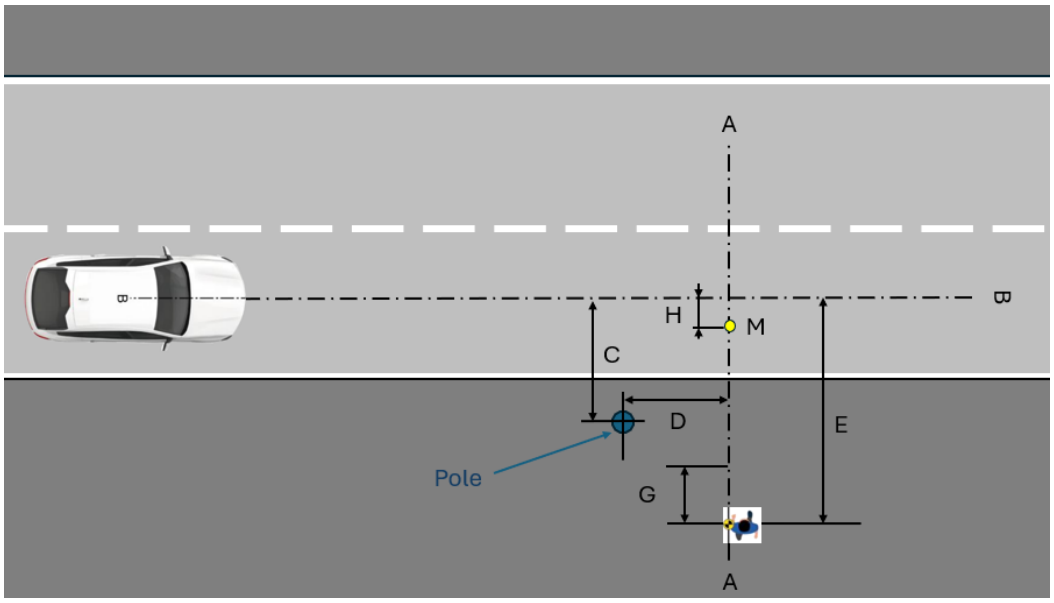
Standard CPNA-25% with Electrical cabinet/ trash bin before pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Mid Electrical Cabinet </Trash bin to VUT centreline BB	2.5m
D	Side Electrical Cabinet/Trash bin to pedestrian path AA	1.0-1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.6 CPNA – 25% with Street light pole in front of pedestrian path

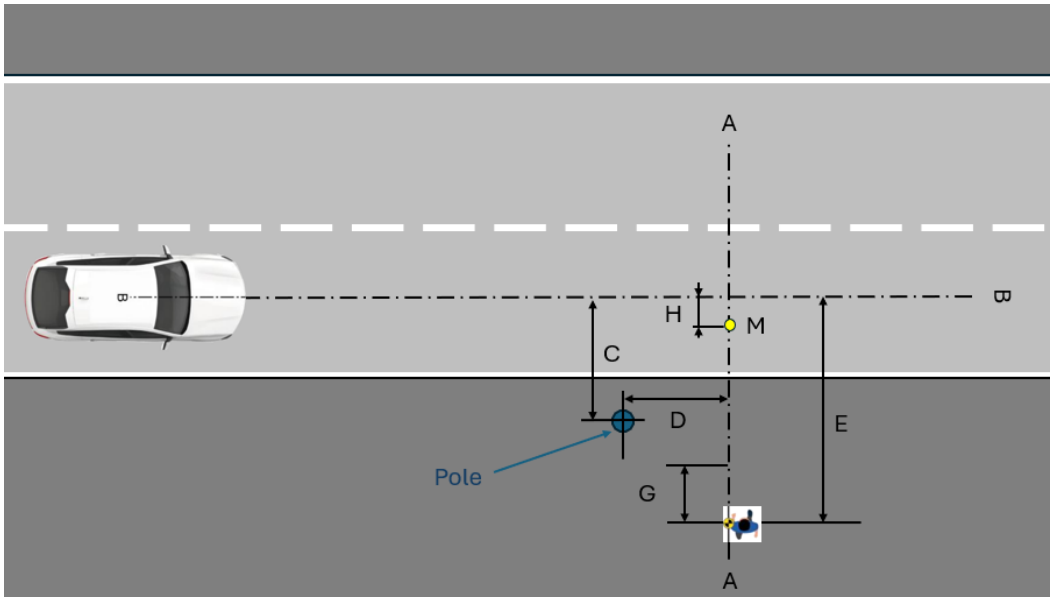
Standard CPNA-25% with Street light pole Ø 23 cm in front of pedestrian path AA.



Axes		Values
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Mid Pole to VUT centreline BB	2.5m
D	Mid Pole to pedestrian path AA	1.0 - 1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.7 CPNA – 25% with Traffic light pole in front of pedestrian path

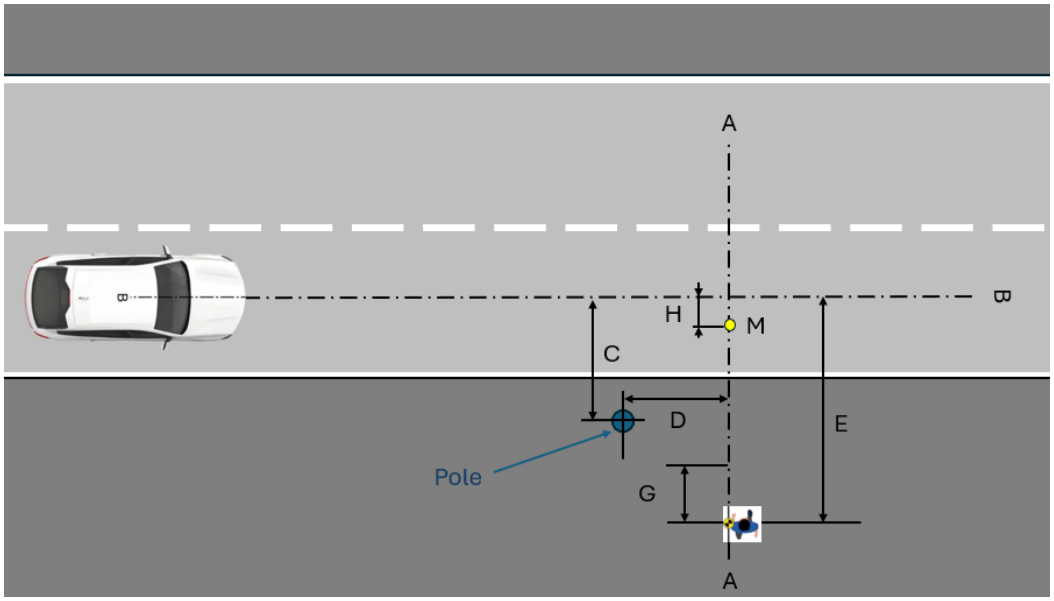
Standard CPNA-25% with Traffic light pole Ø 12 cm in front of pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Mid Pole to VUT centreline BB	2.5m
D	Mid Pole to pedestrian path AA	1.0 – 1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.8 CPNA – 25% with Traffic sign pole in front of pedestrian path

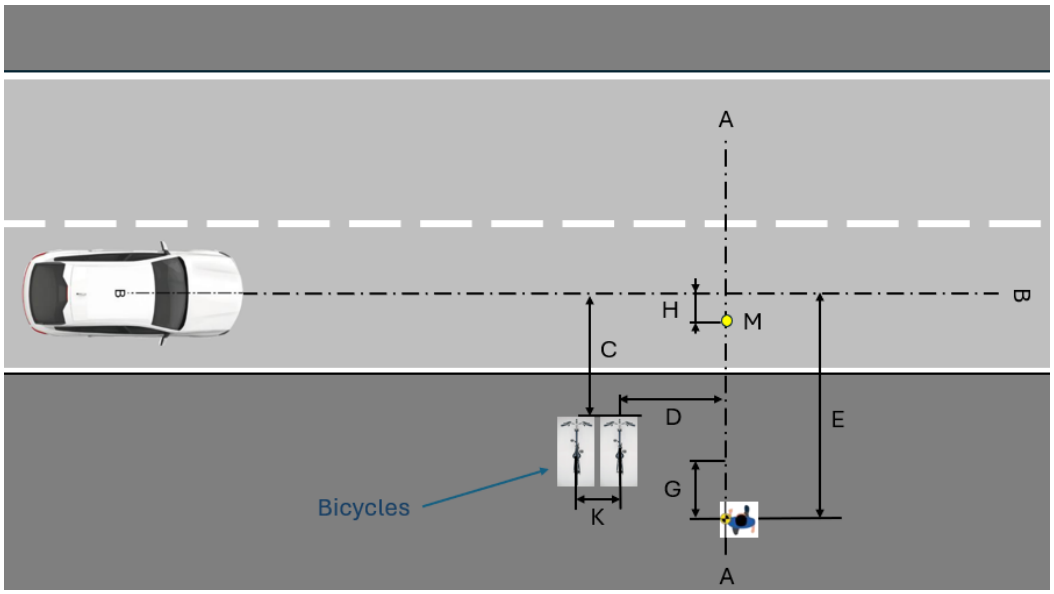
Standard CPNA-25% with Traffic sign pole Ø 7 cm in front of pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Mid Pole to VUT centreline BB	2.5m
D	Mid Pole to pedestrian path AA	1.0 – 1.5m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.9 CPNA – 25% with parked bicycles in front of pedestrian path

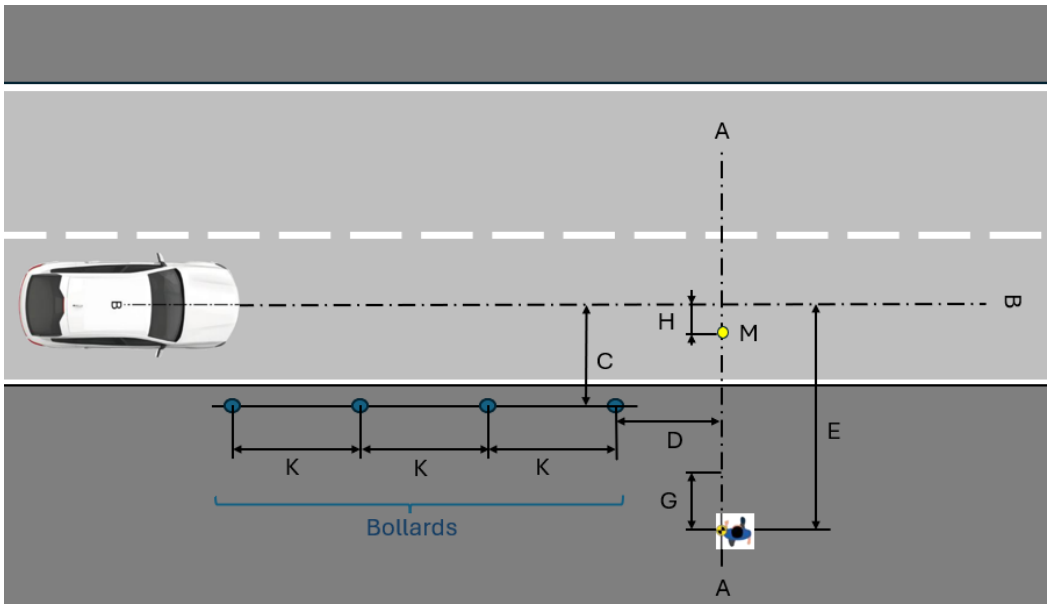
Standard CPNA-25% with two parked bicycles in front of pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Front bicycle wheel to VUT centreline BB	2.5m
D	Mid front wheel on bicycle to pedestrian path AA, for the bicycle closest to pedestrian path.	1.0 – 1.5m
K	Between the two parallel parked bicycles	1.0m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.10 CPNA – 25% with multiple bollards in front of pedestrian path

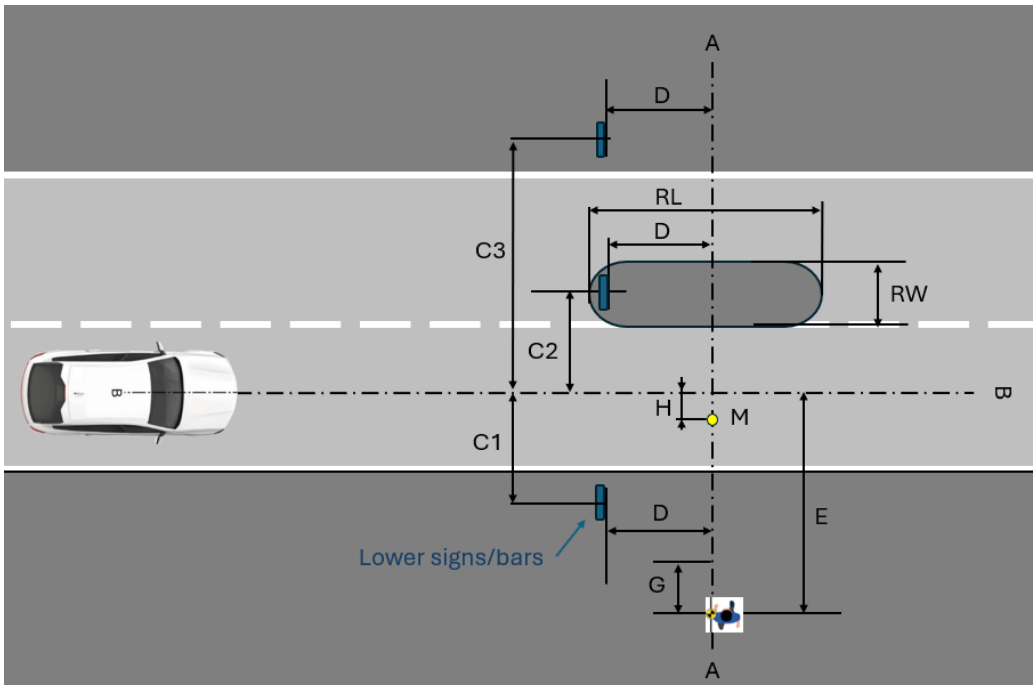
Standard CPNA-25% with four bollards in front of pedestrian path AA.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Mid of the bollards to the VUT centreline BB	2.25m
D	Mid of the last bollard to the pedestrian path	1.0 – 1.5m
K	Mid to mid of the closest bollards	1.0m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.11 CPNA – 25% with lower sign bars/poles on both sides

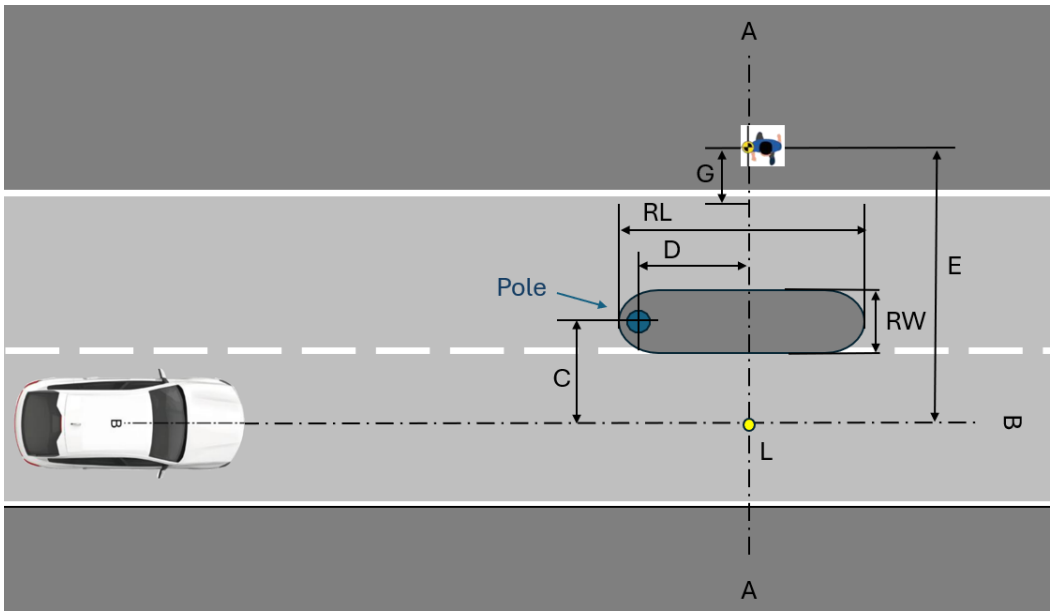
Standard CPNA-25% with lower sign bars/poles on both sides.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C1	Distance mid of the sign to the VUT centreline BB	
C2	Distance mid of the sign to the VUT centreline BB	
C3	Distance mid of the sign to the VUT centreline BB	
D	Distance backside of the sign to pedestrian path AA	1.0 – 1.5m
RL	Refuge length	
RW	Refuge width	1.2m
H	Impact point offset for 25%	
Points		
M	Impact position for 25% nearside scenario	

1.1.12 CPFA – 50% with traffic light pole on refuge

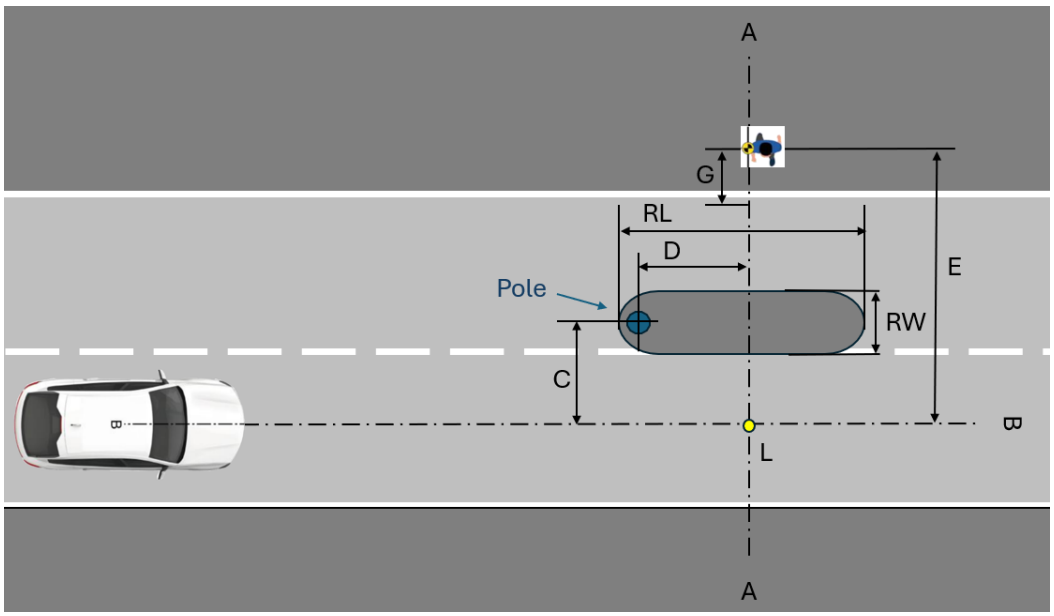
Standard CPFA-50% with traffic light pole Ø 12cm on refuge.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Mid pole to the VUT centreline BB	2.35m
D	Mid pole to pedestrian path AA.	1.0 – 1.5m
RL	Refuge length	
RW	Refuge width	1.2m
Points		
L	Impact position for 50% scenarios	

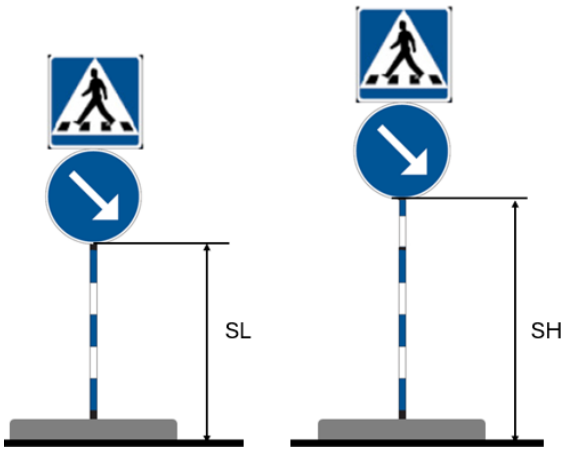
1.1.13 CPFA – 50% with traffic sign pole on refuge

Standard CPFA-50% with traffic sign pole Ø 7cm on refuge. Two traffic signs on the pole positioned in two variants (low mounted and high mounted).



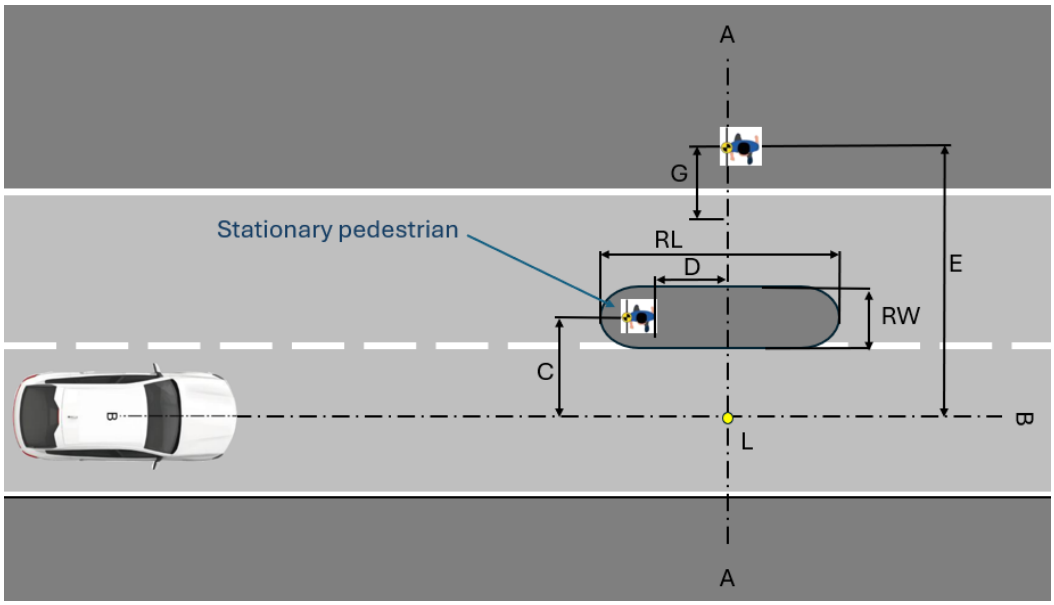
Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Mid pole to the VUT centreline BB	2.35m
D	Mid pole to pedestrian path AA.	1.0 – 1.5m
RL	Refuge length	
RW	Refuge width	1.2m
Points		
L	Impact position for 50% scenarios	
Heights		
SL	Lowest edge of lowest sign to ground	1.45m
SH	Lowest edge of lowest sign to ground	1.75m

Example of signs:


SL
SH

1.1.14 CPFA – 50% with stationary pedestrian on refuge before pedestrian path

Standard CPFA-50% with stationary pedestrian standing on refuge in front of pedestrian path AA.

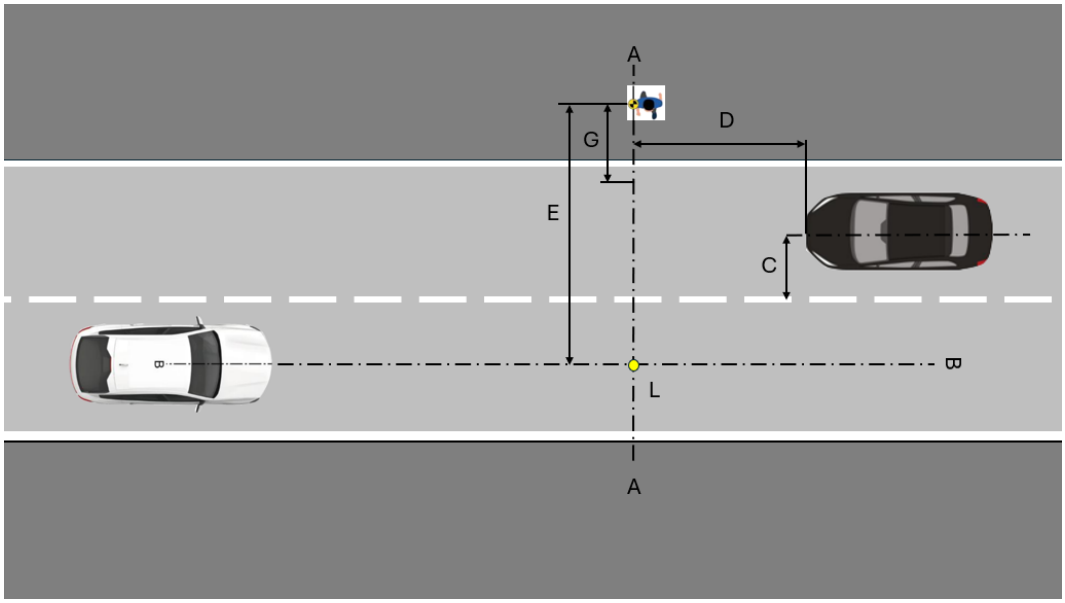


Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Stationary pedestrian H-point to VUT centreline BB	2.35m
D	Stationary pedestrian left shoulder to pedestrian path AA.	1.0 – 1.5m
RL	Refuge length	
RW	Refuge width	1.2m
Points		
L	Impact position for 50% scenarios	

1.1.15 CPFA – 50% with stopped oncoming vehicle in adjacent lane behind pedestrian path

Standard CPFA-50% with stopped oncoming vehicle in adjacent lane behind pedestrian path AA.

Oncoming vehicle positioned middle of adjacent lane.



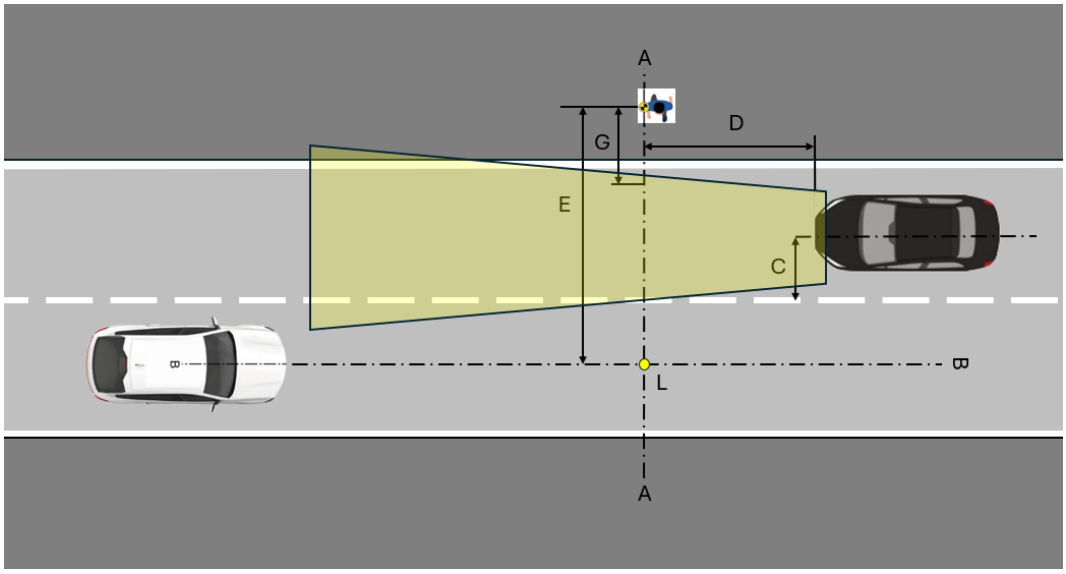
Axes		Values
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Centre line stopped vehicle to centre of the centre dashed lane marking of the VUT lane.	1.75m
D	Mid front stopped vehicle to pedestrian path AA	1.5 – 2.5m
Points		
L	Impact position for 50% scenarios	

1.2 Illumination – Glare (Car-to-Pedestrian Nighttime)

1.2.1 CPFA – 50% with stopped oncoming vehicle in adjacent lane behind pedestrian path, nighttime with streetlights and low beam.

Standard CPFA-50% with stopped oncoming vehicle in adjacent lane behind pedestrian path.

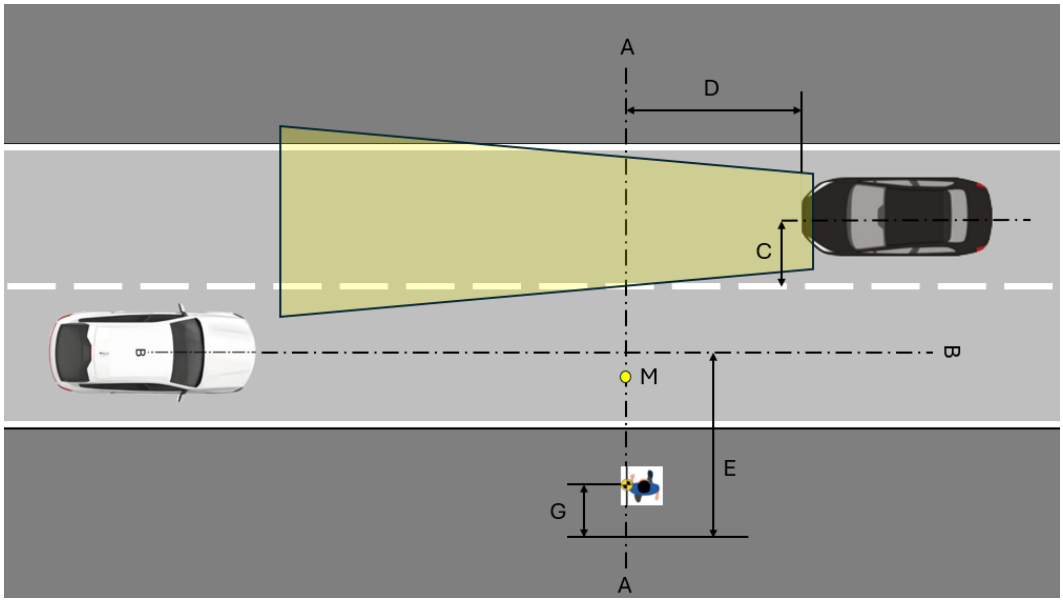
Oncoming vehicle positioned middle of adjacent lane with low beam. Streetlights according to Euro NCAP CPFA night test.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Centre line stopped vehicle to centre of the centre dashed lane marking of the VUT lane.	1.75m
D	Mid front stopped vehicle to pedestrian path AA	1.5 – 2.5m
Points		
L	Impact position for 50% scenarios	

1.2.2 CPNA – 25% with stopped oncoming vehicle in adjacent lane behind pedestrian path, nighttime with streetlights and low beam

Standard CPNA-25% with stopped oncoming vehicle in adjacent lane behind pedestrian path. Oncoming vehicle positioned middle of adjacent lane with low beam. Streetlights according to Euro NCAP CPNA night test.

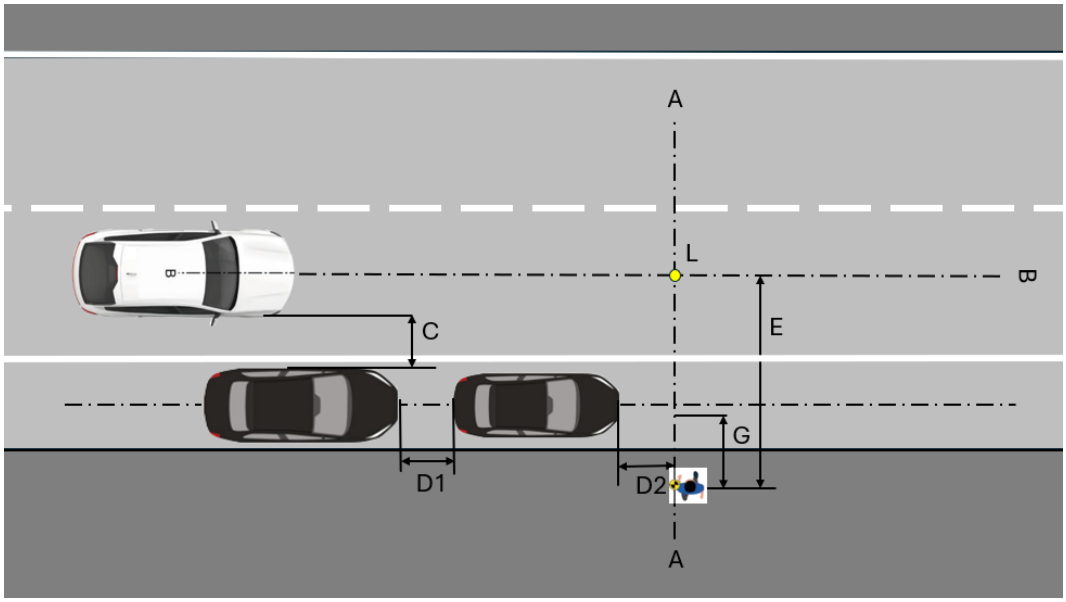


Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	6.0m
G	Dummy acceleration distance (walking)	1.5m
C	Centre line stopped vehicle to centre of the centre dashed lane marking of the VUT lane.	1.75m
D	Mid front stopped vehicle to pedestrian path AA	1.5 – 2.5m
Points		
M	Impact position for 25% nearside scenario	

1.3Obstruction/Obscuration (Car-to-Pedestrian)

1.3.1 CPNCO – 50% with variation of starting position

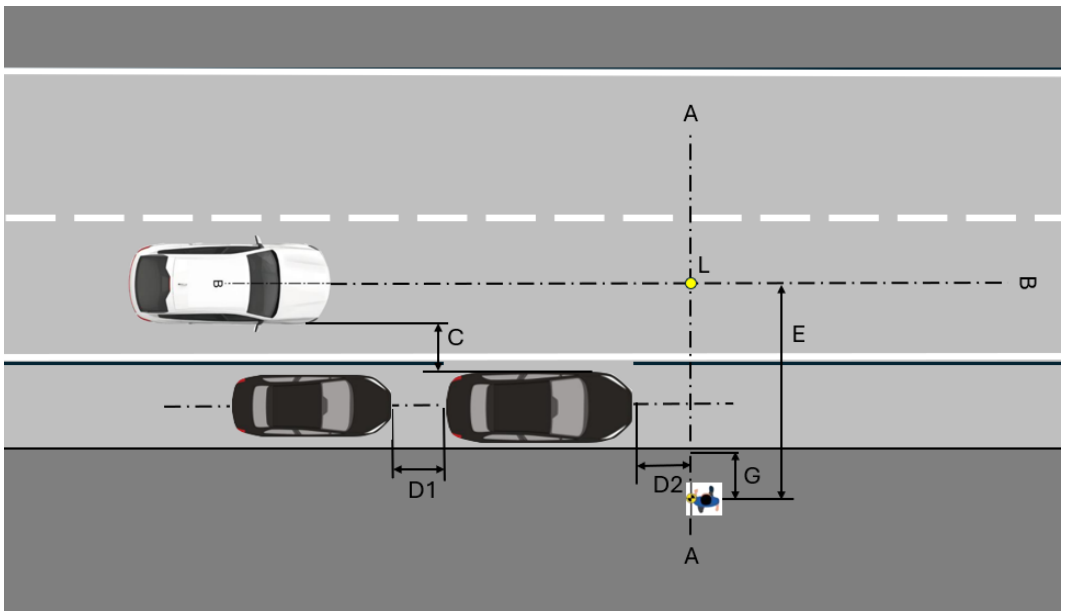
Standard CPNCO-50% with variation of starting point E for the pedestrian.



Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m -25%
G	Dummy acceleration distance (walking)	1.0m
C	Distance between Vehicle under test and larger obstruction vehicle	1.0m
D1	Distance front of first obstruction vehicle to rear of second obstruction vehicle	1.0m
D2	Dummy H-point to front of obstruction vehicle	1.0m
Points		
L	Impact position for 50% scenarios	

1.3.2 CPNCO – with pedestrian walking in between parked vehicles.

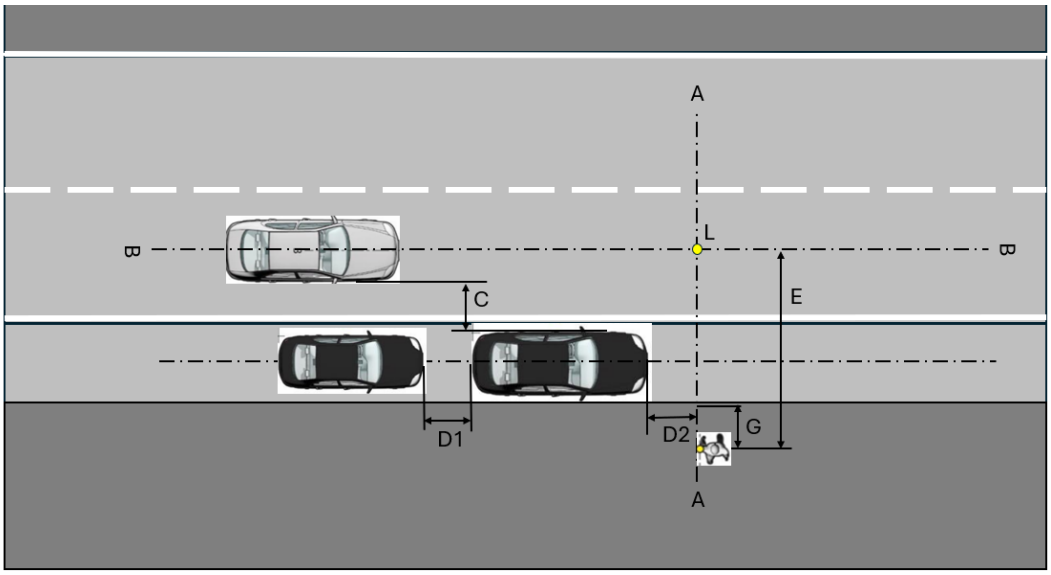
Standard CPNCO-50% with 1st parked vehicle moved to behind the pedestrian path. Allowing the pedestrian to walk in between the two vehicles.



Axes		Values
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m -25%
G	Dummy acceleration distance (walking)	1.0m
C	Distance between Vehicle under test and larger obstruction vehicle	1.0m
D1	Distance front of first obstruction vehicle to rear of second obstruction vehicle	1.0m
D2	Dummy H-point to front of obstruction vehicle	1.0m
Points		
L	Impact position for 50% scenarios	

1.3.3 CPNCO – with reversed order of the parked vehicles before pedestrian path.

Standard CPNCO-50% with reversed order of the two parked vehicles, so the larger vehicle is in front of the smaller vehicle.

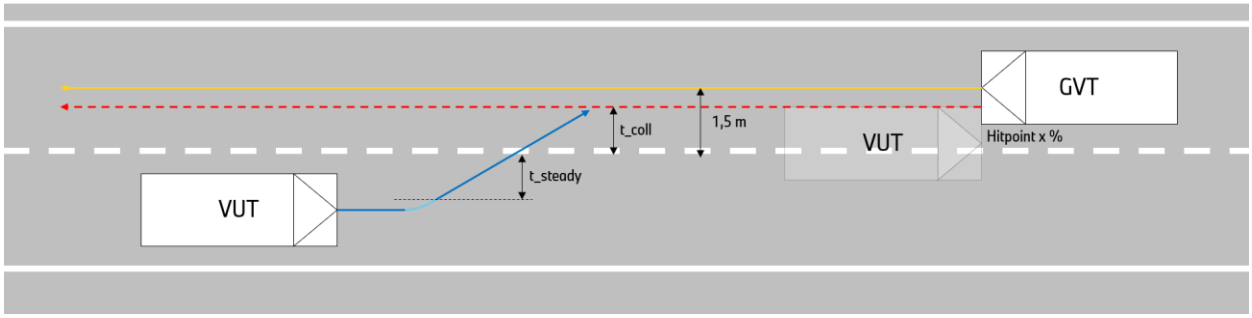


Axes		**Values**
AA	Trajectory of pedestrian dummy H-point in std CPNA	
BB	Axis of centreline of Vehicle under Test	
Distances		
E	Dummy H-point, start to 50%-impact	4.0m
G	Dummy acceleration distance (walking)	1.0m
C	Distance between Vehicle Under Test and larger obstruction vehicle	1.0m
D1	Distance front of first obstruction vehicle to rear of second obstruction vehicle	1.0m
D2	Distance dummy H-point to front of obstruction vehicle	1.0m
Points		
L	Impact position for 50% scenarios	

2 LANE DEPARTURE COLLISIONS

2.1 Parameters for Oncoming & Overtaking scenarios

2.1.1 C2C Oncoming

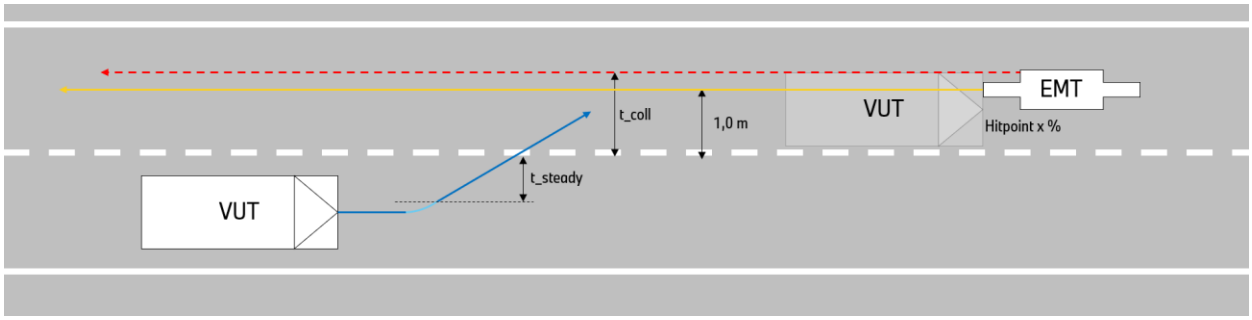


Standard Range											
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]					
						100	120	140	160	180	200
90	0,2	0,70	3,50	0,824	**4,12**	114	137	160	183	206	229
90	0,3	0,90	3,00	0,824	2,75	76	92	107	122	137	153
90	0,4	0,80	2,00	0,824	2,06	57	69	80	92	103	114
90	0,5	0,75	1,50	0,824	1,65	46	55	64	73	82	92
90	0,6	0,60	1,00	0,824	1,37	38	46	53	61	69	76

Robustness Layer (Impact location)											
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]					
						-	-	144	-	-	-
100	0,2	0,70	3,50	0,644	**3,22**	-	-	129	-	-	-
100	0,3	0,90	3,00	0,644	2,15	-	-	86	-	-	-
100	0,4	0,80	2,00	0,644	1,61	-	-	64	-	-	-
100	0,5	0,75	1,50	0,644	1,29	-	-	52	-	-	-
100	0,6	0,60	1,00	0,644	1,07	-	-	43	-	-	-
90	0,2	0,70	3,50	0,824	**4,12**	-	-	165	-	-	-
90	0,3	0,90	3,00	0,824	2,75	-	-	110	-	-	-
90	0,4	0,80	2,00	0,824	2,06	-	-	82	-	-	-
90	0,5	0,75	1,50	0,824	1,65	-	-	66	-	-	-
90	0,6	0,60	1,00	0,824	1,37	-	-	55	-	-	-
80	0,2	0,70	3,50	1,004	**5,02**	-	-	201	-	-	-
80	0,3	0,90	3,00	1,004	**3,35**	-	-	134	-	-	-
80	0,4	0,80	2,00	1,004	2,51	-	-	100	-	-	-
80	0,5	0,75	1,50	1,004	2,01	-	-	80	-	-	-
80	0,6	0,60	1,00	1,004	1,67	-	-	67	-	-	-

Robustness Layer (Initial position)												
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]						
						-	-	**144**	-	-	-	
90	0,2	0,70	3,50	1,074	**5,37**	-	-	215	-	-	-	
90	0,3	0,90	3,00	1,074	**3,58**	-	-	143	-	-	-	
90	0,4	0,80	2,00	1,074	2,69	-	-	107	-	-	-	
90	0,5	0,75	1,50	1,074	2,15	-	-	86	-	-	-	
90	0,6	0,60	1,00	1,074	1,79	-	-	72	-	-	-	
90	0,2	0,70	3,50	0,574	2,87	-	-	115	-	-	-	
90	0,3	0,90	3,00	0,574	1,91	-	-	77	-	-	-	
90	0,4	0,80	2,00	0,574	1,44	-	-	57	-	-	-	
90	0,5	0,75	1,50	0,574	1,15	-	-	46	-	-	-	
90	0,6	0,60	1,00	0,574	0,96	-	-	38	-	-	-	

2.1.2 C2M Oncoming



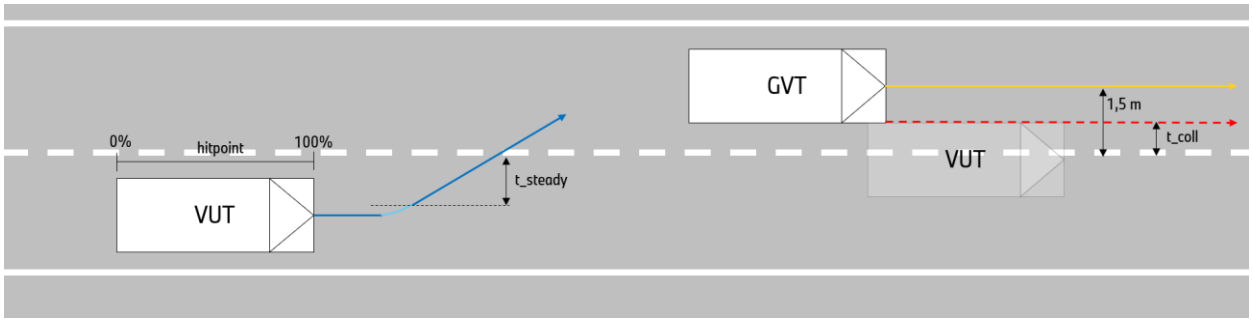
Standard Range											
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]					
						100	120	140	160	180	200
110	0,2	0,70	3,50	0,820	4,10	114	137	159	182	205	228
110	0,3	0,90	3,00	0,820	2,73	76	91	106	121	137	152
110	0,4	0,80	2,00	0,820	2,05	57	68	80	91	103	114
110	0,5	0,75	1,50	0,820	1,64	46	55	64	73	82	91
110	0,6	0,60	1,00	0,820	1,37	38	46	53	61	68	76

Robustness Layer (Impact location)											
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]					
						-	-	144	-	-	-
120	0,2	0,70	3,50	0,640	3,20	-	-	128	-	-	-
120	0,3	0,90	3,00	0,640	2,13	-	-	85	-	-	-
120	0,4	0,80	2,00	0,640	1,60	-	-	64	-	-	-
120	0,5	0,75	1,50	0,640	1,28	-	-	51	-	-	-
120	0,6	0,60	1,00	0,640	1,07	-	-	43	-	-	-
110	0,2	0,70	3,50	0,820	4,10	-	-	164	-	-	-
110	0,3	0,90	3,00	0,820	2,73	-	-	109	-	-	-
110	0,4	0,80	2,00	0,820	2,05	-	-	82	-	-	-
110	0,5	0,75	1,50	0,820	1,64	-	-	66	-	-	-
110	0,6	0,60	1,00	0,820	1,37	-	-	55	-	-	-
100	0,2	0,70	3,50	1,000	5,00	-	-	200	-	-	-
100	0,3	0,90	3,00	1,000	3,33	-	-	133	-	-	-
100	0,4	0,80	2,00	1,000	2,50	-	-	100	-	-	-
100	0,5	0,75	1,50	1,000	2,00	-	-	80	-	-	-
100	0,6	0,60	1,00	1,000	1,67	-	-	67	-	-	-

Robustness Layer (Initial position)						
	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h]

Impact Location [%]						-	-	144	-	-	-
110	0,2	0,70	3,50	1,070	5,35	-	-	214	-	-	-
110	0,3	0,90	3,00	1,070	3,57	-	-	143	-	-	-
110	0,4	0,80	2,00	1,070	2,68	-	-	107	-	-	-
110	0,5	0,75	1,50	1,070	2,14	-	-	86	-	-	-
110	0,6	0,60	1,00	1,070	1,78	-	-	71	-	-	-
110	0,2	0,70	3,50	0,820	4,10	-	-	164	-	-	-
110	0,3	0,90	3,00	0,820	2,73	-	-	109	-	-	-
110	0,4	0,80	2,00	0,820	2,05	-	-	82	-	-	-
110	0,5	0,75	1,50	0,820	1,64	-	-	66	-	-	-
110	0,6	0,60	1,00	0,820	1,37	-	-	55	-	-	-

2.1.3 C2C Overtaking



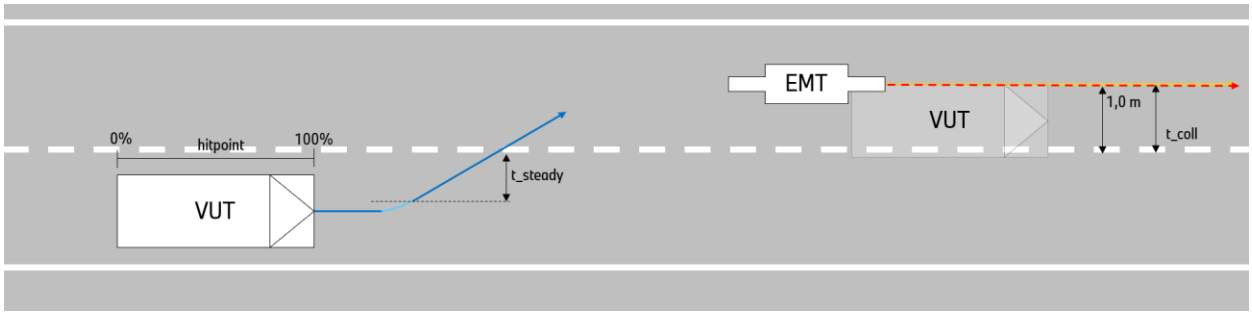
Standard Range							
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h] 10	TTC: front target, rear ego (this is necessary to incorporate the Impact Location lengthwise)
25	0,2	0,70	3,50	0,644	3,22	7,71	2,78
25	0,3	0,90	3,00	0,644	2,15	4,73	1,70
25	0,4	0,80	2,00	0,644	1,61	3,24	1,17
25	0,5	0,75	1,50	0,644	1,29	2,35	0,85
25	0,6	0,60	1,00	0,644	1,07	1,75	0,63
25	0,7	0,53	0,76	0,644	0,92	1,33	0,48

Robustness Layer (Impact location)							
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h] 8	TTC: front target, rear ego (this is necessary to incorporate the Impact Location lengthwise)
0	0,2	0,70	3,50	0,644	3,22	7,16	**3,22**
0	0,3	0,90	3,00	0,644	2,15	4,77	2,15
0	0,4	0,80	2,00	0,644	1,61	3,58	1,61
0	0,5	0,75	1,50	0,644	1,29	2,86	1,29
0	0,6	0,60	1,00	0,644	1,07	2,39	1,07
0	0,7	0,53	0,76	0,644	0,92	2,04	0,92
25	0,2	0,70	3,50	0,644	3,22	5,93	2,67
25	0,3	0,90	3,00	0,644	2,15	3,54	1,59
25	0,4	0,80	2,00	0,644	1,61	2,35	1,06
25	0,5	0,75	1,50	0,644	1,29	1,63	0,73
25	0,6	0,60	1,00	0,644	1,07	1,15	0,52
25	0,7	0,53	0,76	0,644	0,92	0,81	0,37
26	0,2	0,70	3,50	0,644	3,22	5,88	2,64
26	0,3	0,90	3,00	0,644	2,15	3,49	1,57
26	0,4	0,80	2,00	0,644	1,61	2,30	1,03
26	0,5	0,75	1,50	0,644	1,29	1,58	0,71
26	0,6	0,60	1,00	0,644	1,07	1,11	0,50
26	0,7	0,53	0,76	0,644	0,92	0,76	0,34
50	0,2	0,70	3,50	0,644	3,22	4,69	2,11
50	0,3	0,90	3,00	0,644	2,15	2,31	1,04
50	0,4	0,80	2,00	0,644	1,61	1,12	0,50
50	0,5	0,75	1,50	0,644	1,29	0,40	0,18
50	0,6	0,60	1,00	0,644	1,07	-0,08	-0,03
50	0,7	0,53	0,76	0,644	0,92	-0,42	-0,19

Robustness Layer (Initial position)							
Impact Location [%]	vLat [m/s]	d2 [m]	t_steady [s]	d_coll [m]	t_coll [s]	Distance to target @ crossing [m] vdiff_long [km/h] 8	TTC: front target, rear ego (this is necessary to incorporate the Impact Location lengthwise)
25	0,2	0,70	3,50	0,894	4,47	8,70	**3,92**
25	0,3	0,90	3,00	0,894	2,98	5,39	2,43
25	0,4	0,80	2,00	0,894	2,24	3,74	1,68
25	0,5	0,75	1,50	0,894	1,79	2,74	1,23
25	0,6	0,60	1,00	0,894	1,49	2,08	0,94
25	0,7	0,53	0,76	0,894	1,28	1,61	0,72
25	0,2	0,70	3,50	0,394	1,97	3,15	1,42

25	0,3	0,90	3,00	0,394	1,31	1,69	0,76
25	0,4	0,80	2,00	0,394	0,99	0,96	0,43
25	0,5	0,75	1,50	0,394	0,79	0,52	0,23
25	0,6	0,60	1,00	0,394	0,66	0,23	0,10
25	0,7	0,53	0,76	0,394	0,56	0,02	0,01

2.1.4 C2M Overtaking



Standard Range							
Impact Location [%]	**vLat [m/s]**	**d2 [m]**	**t_steady [s]**	**d_coll [m]**	**t_coll [s]**	Distance to target @ crossing [m] vdiff_long [km/h] **10**	TTC: front target, rear ego (this is necessary to incorporate the Impact Location lengthwise)
25	0,2	0,70	3,50	1,000	5,00	12,66	**4,56**
25	0,3	0,90	3,00	1,000	3,33	8,03	2,89
25	0,4	0,80	2,00	1,000	2,50	5,71	2,06
25	0,5	0,75	1,50	1,000	2,00	4,33	1,56
25	0,6	0,60	1,00	1,000	1,67	3,40	1,22
25	0,7	0,53	0,76	1,000	1,43	2,74	0,99