Technical Working Subgroup on GTR9 Amendment 3: Current Status

Task Force „GTR9 Amendment 3“ Technical Working Subgroup

3rd Meeting (Teams)

03 December 2021

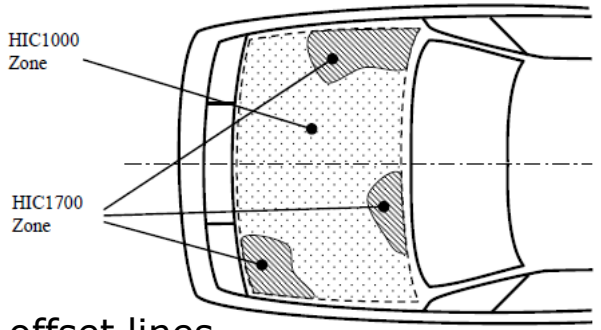
Bundesanstalt für Straßenwesen

So far, the Technical Working Subgroup reporting to the Task Force on Amendment 3 has held two meetings (online).

While good progress has been made in understanding the different positions, some remaining technical items need to be further discussed:

1) Common interpretation of the markup sequence

2) Testing in offset zones (CoG of headform impactor aiming at points therein).



GTR9 describes different ways of the markup sequence:

While the text starts with first drawing the SRLs, BRRL, BLERL
and then defining the HIC 1000 zone(s)
and remaining HIC 1700 zone(s) within these boundaries
(compare 3.1, 3.12, 5.2.3, 5.2.4),
illustration 11 suggests to first mark the 82.5mm minimum distance offset lines
and define the HIC zones afterwards.

Thus, GTR9 leaves room for different interpretations of the markup sequence:

a) Define the HIC zones prior to marking the offset lines

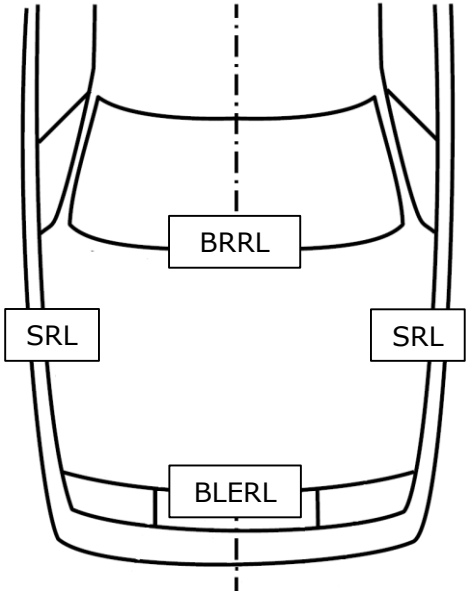
b) Define the HIC zones subsequent to marking the offset lines

However, the procedure has to either follow option a) or option b).

GTR9 does not provide room for a different interpretation or combination of both options.

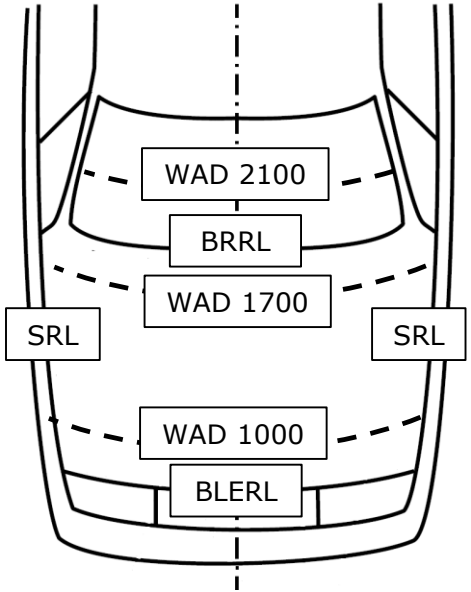
Option a)

1. Markup:
SRL, BLERL, BRRL,



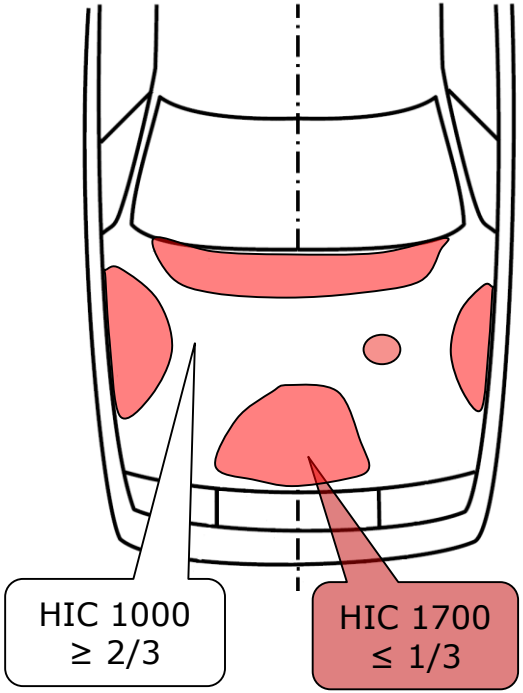
Option b)

1. Markup:
SRL, BLERL, BRRL,
WAD 1000/1700/2100



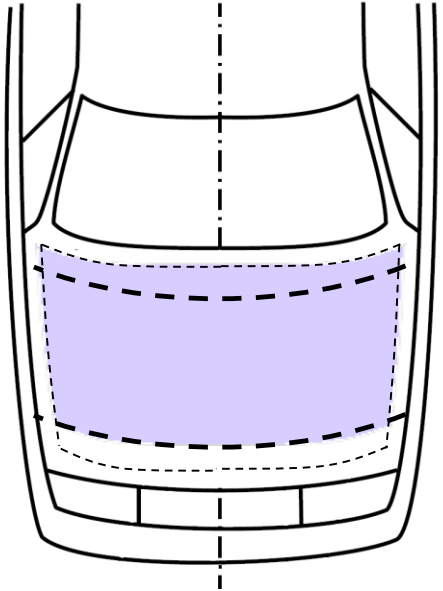
Option a)

2. Determination of
HIC 1000 / HIC 1700
Zones (within Bonnet Top Area)



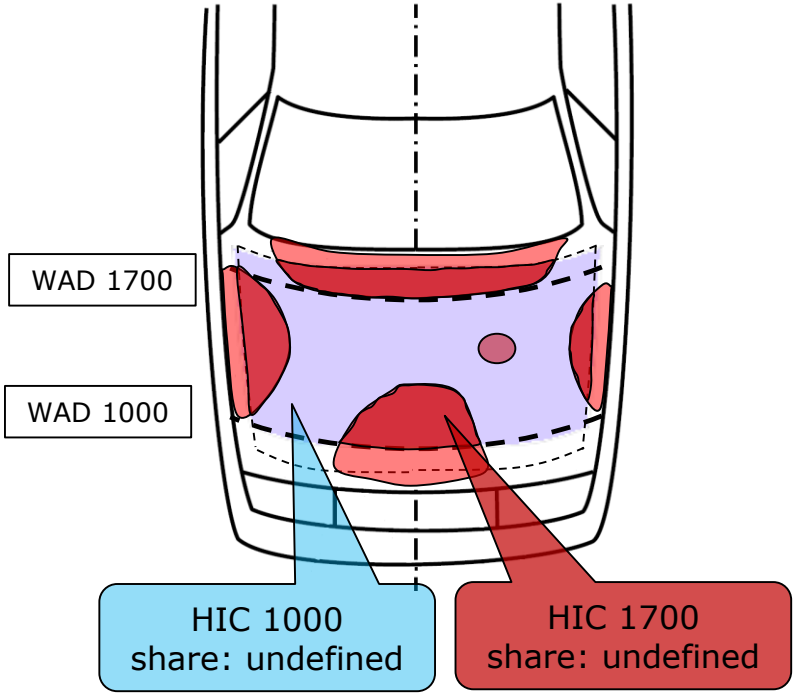
Option b)

2. Markup:
Offset Lines
➔ Impact area



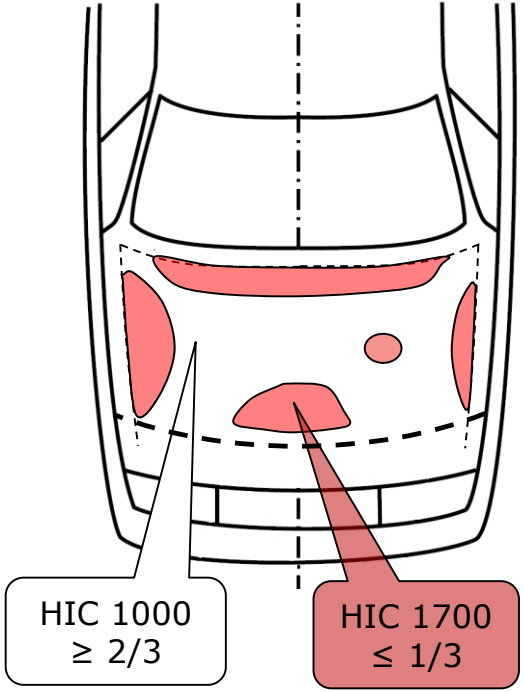
Option a)

3. Markup:
WAD 1000/1700/2100
Offset Lines
➔ Impact area



Option b)

3. Determination of
HIC 1000 / HIC 1700
Zones (within Impact Area)



GTR9 refers to different ways of marking the test points (and aligning the headform impactors):

While the text states the impacted zone being determined by the point of first contact of the headform (compare 5.2.4.3),
illustration 6 suggests the proximity of the impact point (with initial contact to the vehicle) to the target point depending on the angle of travel and the (2-dimensional section of the) vehicle contour.

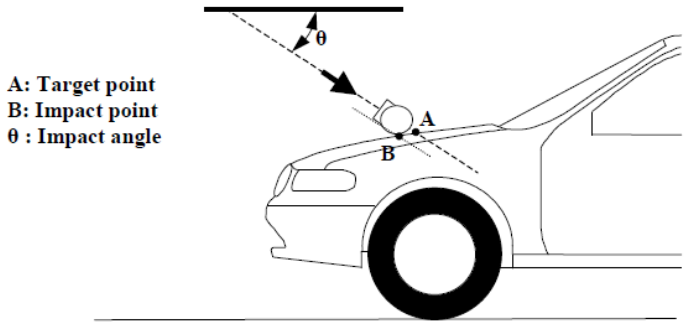


Figure 6: Impact and target point (see paragraphs 3.19. and 3.25.)

Thus, GTR9 leaves room for different interpretations of the marking of test points:

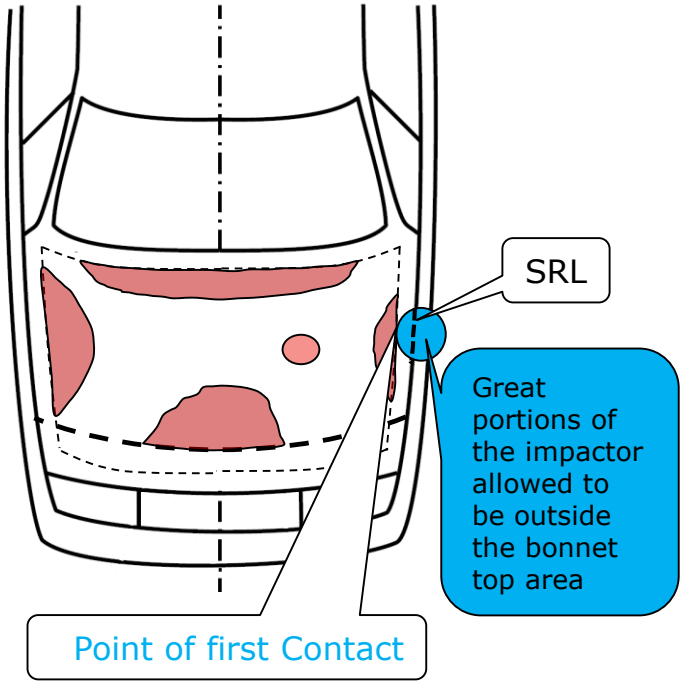
a) Mark the test points with the global first point of contact

b) Mark the test points with the first point of contact on the longitudinal vertical impactor centreplane (measuring point).

However, the procedure has to either follow option a) or option b).
No room is provided for a different interpretation of GTR9 or combination of both options.

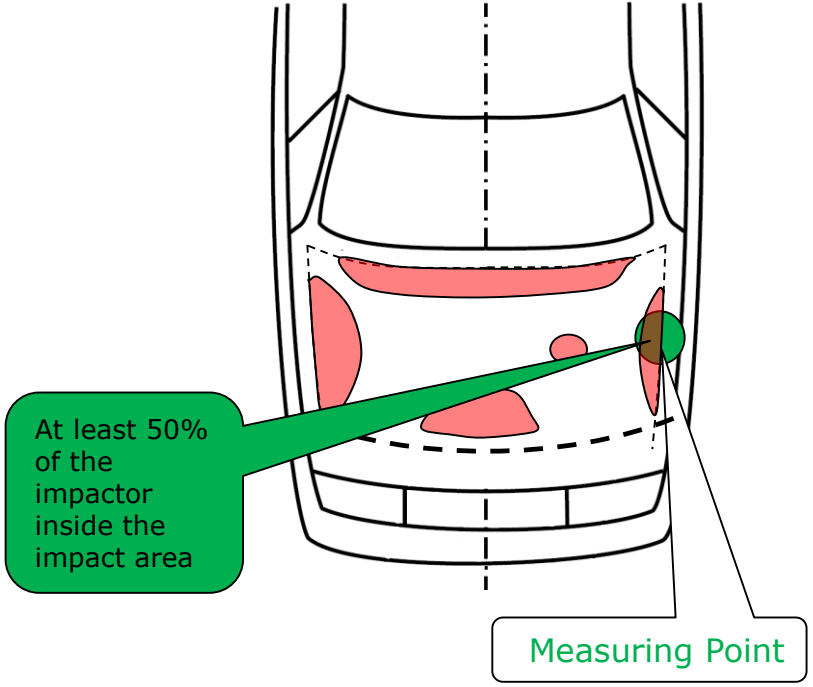
Option a)

4. Determination of Impact Points: Impactor 1PoC within Impact Area



Option b)

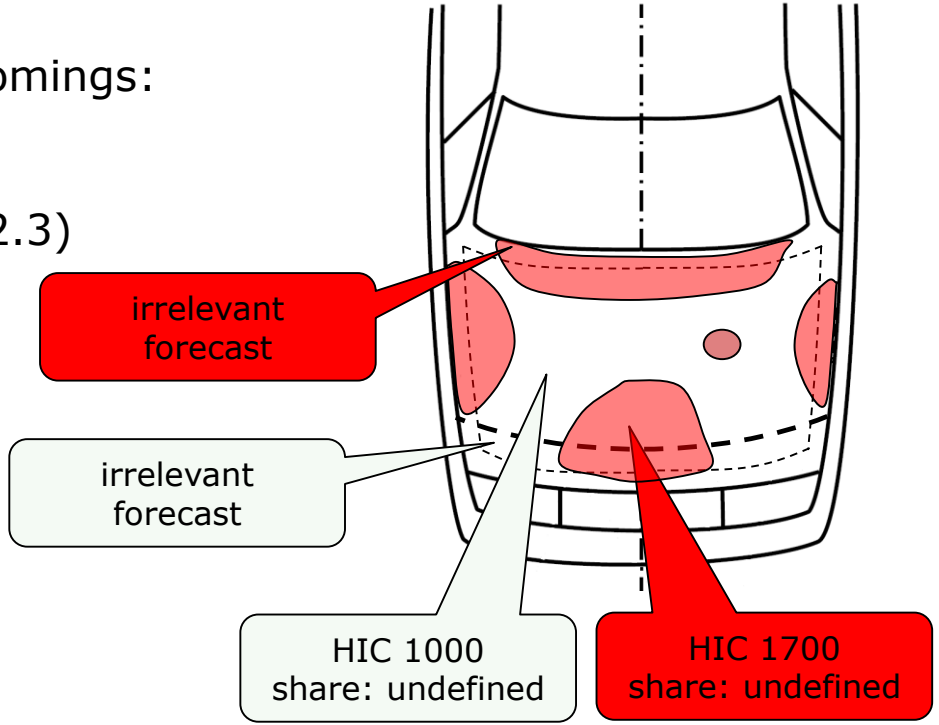
4. Determination of Impact Points: Impactor CoG within Impact Area



In theory, GTR9 allows the marking of the vehicle following two different sequences.

However, option a) shows several shortcomings:

- undefined ratio of HIC 1000/1700 in the impact area (does not meet 5.2.3)
- irrelevant forecast of zones outside the impact area
  ➔ cannot be verified, no test allowed (compare 7.3.2 and 7.4.2)

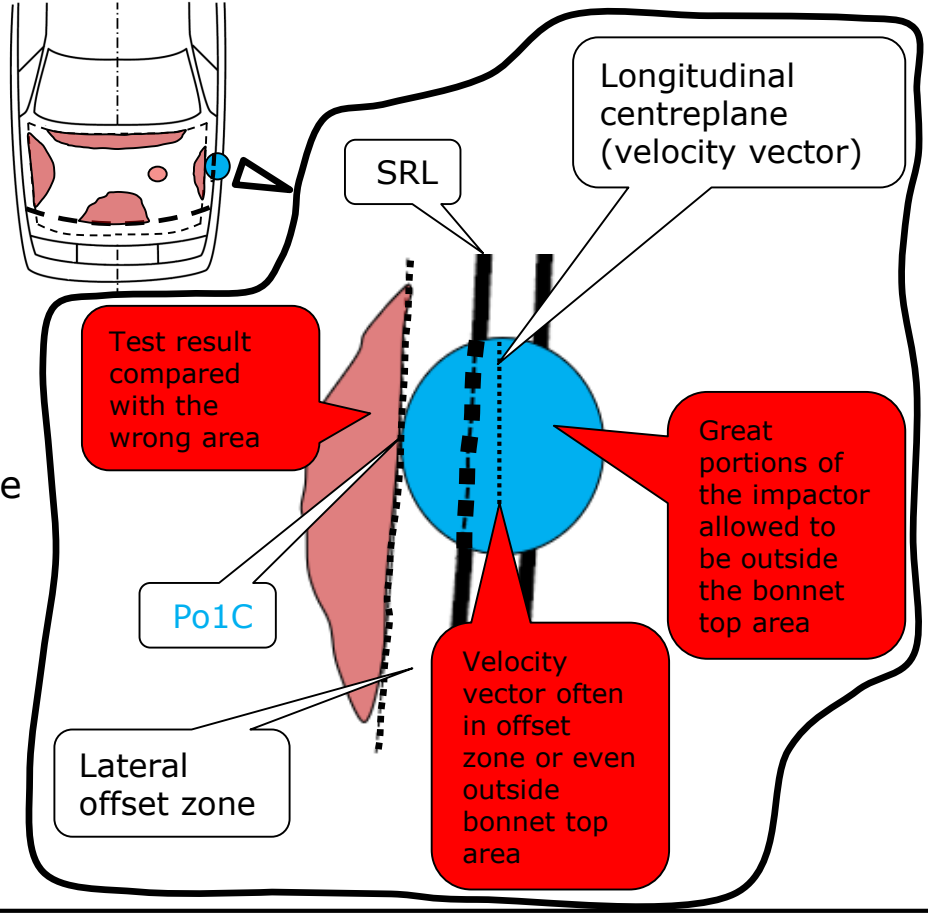


Summary (II)

GTR9 allows for aligning the headform impactor in two different ways.

However, option a) shows several shortcomings:

- Undefined repeatability and reproducibility of alignment and test results
- Test results often not correctly allocated
- Lateral offset zones, which do not belong to the impact area (compare 7.3.2 and 7.4.2) are often impacted with the velocity vector of the headform
- At lateral boundaries, big portions of the impactor are deemed to be outside the Side Reference Lines.



Shortcomings of option a) in terms of the markup sequence lead to the conclusion that only option b) is applicable.

Shortcomings of option a) in terms of impactor alignment lead to the conclusion that only option b) is applicable.

Option b) is entirely described and addressed with Draft Amendment 3 to GTR9.

GRSP is requested to resubmit document ECE/TRANS/WP.29/2021/53 for consideration and adoption at the next meetings of WP.29 and AC.3.

Questions?