	CO-ORDINATION OF NOTIFIED BODIES **PPE Regulation 2016/425** **RECOMMENDATION FOR USE**	PPE-R/01.003 Version 1

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Question related to ☐ PPE Regulation ☐ PPE Guidelines ☒ EN/prEN: Various ☐ Other:

Article: Annex: Clause:

Key words:

Shock absorption, falling headform, alignment, procedure

Question:

What is the correct positioning procedure of the helmeted headform for falling headform shock absorption testing?

The following standards are affected:

EN 966 : 2012 + A1:2012	*clause 7.2.3*
EN 1077 : 2007	*clause 5.5 (refers to EN 13087-2 : 2000 cl. 5.3)*
EN 1078 : 2012 + A1:2012	*clause 5.4*
EN 1080 : 2013	*clause 5.4*
EN 1384 : 2017	*clause 5.7.1 (refers to EN13087-2 : 2012 cl. 5.3)*
EN 1385 : 2012	*clause 7.6*
EN 13087-2 : 2000 (+A1) & EN 13087-2 : 2012	*clause 5.3*
EN 13484 : 2012	*clause 5.7*
EN 13781 : 2012	*clause 5.4*

Solution:

Align the target impact point with the centre of the anvil and rotate the headform so that the centre of gravity of the headform, target impact point and anvil centre all lie on the same vertical axis.

Ideally, positioning should also place the line tangential to the external surface of the helmet at the target impact point, parallel to the anvil surface. However, if this cannot also be achieved, then priority shall be given to the alignment between headform centre of gravity, target point and anvil centre.

In circumstances when a tangential impact cannot be achieved, it is accepted that this may lead to the target impact point not being the first point of impact. This is acceptable so long as the first point of contact with the anvil is not so close to the edge of the anvil as to affect the test.

Considerations:

The various standards include various and differing statements regarding positioning:

"the system shall comprise……a system by which the point of impact can be brought into correspondence with the centre of the anvil." (e.g. EN966, EN1078, EN1080, EN1385)

"The impacts shall be directed towards the centre of gravity of the headform." (e.g. EN1077)

"shall comprise….a system to align the impact site with the centre of the anvil." (e.g. EN1384)

"The test headform shall be so positioned that the designated point on the helmet is vertically above the centre of the anvil. The plane tangential to the point of impact shall be horizontal." (e.g. EN13781)

Some of the standards include more than one of these statements, whilst some do not describe the positioning.

If the headform CoG is not aligned with the target impact point and the centre of the anvil, rotation will occur which may affect results. If the target point of impact is not tangential with the anvil and is not the first point of contact, this will also induce rotation which again may affect results. It has been considered that the effect of rotation caused by misalignment of the CoG is more critical and therefore alignment of the CoG should be prioritised.