

Below paragraphs are taken from document 157-05-06. Modifications / additions are marked in **bold blue**.

## I. Proposal

Paragraph 5.2.3.1., amend to read:

**5.1.1.x. The system shall demonstrate anticipatory behavior in interaction with other road user(s), in order to ensure stable, low-dynamic longitudinal behavior and risk minimizing behavior when critical situations could become imminent, e.g. with pedestrians or cutting-in vehicles.**

Kommentar [SR(1)]: Industry sees this a general requirement which could fit under 5.1.1.

### 5.2.3.1. Speed

**The manufacturer shall declare the specified maximum speed based on the forward detection range of the system as described in paragraph 7.1.1.**

The maximum speed up to which the system is permitted to operate is ~~60~~ **130** km/h.

**Specified maximum speeds of more than [100]km/h shall only be permissible if the ALKS is capable of bringing the vehicle to standstill on the hard shoulder during an MRM according to par. X.x.x.**

Paragraph 5.2.3.3., amend to read:

5.2.3.3. The activated system shall detect the distance to the next vehicle in front as defined in paragraph 7.1.1. and shall adapt the vehicle speed **to adjust a safe following distance** in order to avoid a collision.

~~While the ALKS vehicle is not at standstill, the system shall adapt the speed to adjust the distance to a vehicle in front in the same lane to be equal or greater than the minimum following distance.~~

In case ~~this the minimum time gap cannot be respected temporarily because of other road users~~ **this following distance to a vehicle in front is temporarily disrupted** (e.g. vehicle is cutting in, decelerating lead vehicle, etc.), the vehicle shall readjust the ~~minimum~~ following distance at the next available opportunity without any harsh braking unless an emergency manoeuvre would become necessary.

~~The minimum following distance shall be calculated using the formula:~~

~~$$d_{\min} = v_{\text{ALKS}} \cdot t_{\text{front}}$$~~

~~Where:~~

~~$d_{\min}$  = the minimum following distance~~

~~$v_{\text{ALKS}}$  = the present speed of the ALKS vehicle in m/s~~

~~$t_{\text{front}}$  = minimum time gap in seconds between the ALKS vehicle and a leading vehicle in front as per the table below:~~

Kommentar [KT(2)]: Industry supports deleting the table.

Kommentar [SR(3)]: However, Industry is flexible to keep parts of this table as long as the increase in distance is a continuous function.

<i>Present speed of the ALKS vehicle</i>		<i>Minimum time gap</i>	<i>Minimum following distance</i>
(km/h)	(m/s)	(s)	(m)
7.2	2.0	1.0	2.0
10	2.78	1.1	3.1
20	5.56	1.2	6.7
30	8.33	1.3	10.8
40	11.11	1.4	15.6
50	13.89	1.5	20.8
60	16.67	1.6	26.7
70	19.44	1.7	33.1
80	22.22	1.8	40.0
90	25.00	1.9	47.5
100	27.78	2.0	55.6
110	30.56	2.0	61.1
120	33.33	2.0	66.7
130	36.11	2.0	72.2

~~For speed values not mentioned in the table, linear interpolation shall be applied.~~

~~Notwithstanding the result of the formula above for present speeds below 2 m/s the minimum following distance shall never be less than 2 m.~~

**The requirements of this paragraph are without prejudice to other requirements in this Regulation, most notably paragraphs 5.2.4. and 5.2.5. with subparagraphs.**

5.2.4. The activated system shall be able to **handle in a safe way the presence in the same lane of** ~~bring the vehicle to a complete stop behind~~ a stationary vehicle, a stationary road user, **a passable or unpassable obstacle [debris, lost cargo, etc.]**, or a blocked lane of travel to avoid a collision. This shall be ensured up to the maximum operational speed of the system.

Kommentar [KT(4): Agree to delete "stationary" in front of road user. All other changes are not necessary. As the provision says "shall be able to", this includes that it can be handled differently, e.g. by evasive steering, but in case this wasn't possible, the system would still need to be able to brake to standstill. The unpassable obstacle is identical to a blocked lane of travel.

Paragraph 5.2.5. and its subparagraphs, amend to read:

5.2.5. The activated system shall detect the risk of collision in particular with another road user ahead or beside the vehicle, due to a decelerating lead vehicle, a cutting in vehicle, ~~a vehicle proceeding in the opposite direction~~ or a suddenly appearing obstacle and shall automatically perform appropriate manoeuvres to minimize risks to safety of the vehicle occupants and other road users.

Kommentar [SR(5): As discussed last session this seems addressed by the suggested Par 5.1.1.x on anticipatory behaviour.

**[Additionally the ALKS shall implement strategies to react to a vehicle proceeding in the opposite direction in the ALKS vehicle's lane of travel aiming to mitigate the effects of a potential collision with that vehicle.]**

~~For conditions not specified in paragraphs 5.2.4., 5.2.5. or its subparagraphs, this shall be ensured at least to the level at which a competent and careful human driver could minimize the risks. This shall be demonstrated the assessment carried out under Annex 4 and by taking guidance from Appendix 3 to Annex 4.~~

Paragraph 5.2.5.3., amend to read:

5.2.5.3. The activated system shall avoid a collision with an unobstructed crossing pedestrian in front of the vehicle.

In a scenario with an unobstructed pedestrian crossing with a lateral speed component of not more than 5 km/h where the anticipated impact point is displaced by not more than 0.2 m compared to the vehicle longitudinal center plane, the activated ALKS shall avoid a collision up to ~~the maximum operational speed of the system~~ **60 km/h**.

Paragraph 5.4.2., amend to read:

**5.4.2.** The initiation of the transition demand shall be such that sufficient time is provided for a safe transition to manual driving.

~~Manufacturers shall declare during type approval that drivers' adjustments in and on the vehicle when the system is active (e.g. for the purpose of engaging in non-driving related activities) do not have negative consequences to a take-over in the manual driving phase."~~

Kommentar [SR(6)]: See informal GRVA-07-27 from industry.