This document is a proposal to informal document GRE-85-20 from GTB; the changes proposed here below in respect to the abovesaid informal document, and the related additional justification are <mark>highlighted in blue</mark>.

I. Proposal

A. New Supplement to the 06, 07 and 08 series of amendments to UN Regulation No. 48

Add new paragraphs 2.7.8. and 2.7.9. to read:

"**2.7.8.**   *"Driver Assistance Projection"* **means a modification of the light distribution for driver assistance purposes.**

2.7.9.   *"RCT (Risk of Collision Time)"* **means the estimated time for the own vehicle and the preceding vehicle to collide, assuming that the relative speed, at the time of estimation, remains constant."**

Add a new paragraph 3.2.9. to read:

"**3.2.9.**   **Where a system is able to provide driver assistance projections on the road, a list of the patterns and symbols shall be provided by the manufacturer.**"

Add a new paragraph 5.35. and related sub-paragraphs to read:

"**5.35.**   **General provisions relating to Driver Assistance Projection**

      The Driver Assistance Projection shall be constituted of patterns, symbols or both.

5.35.1.   **Symbols and patterns shall be related and limited only to warning/highlighting:**

      (a)   the presence of hazardous traffic situation

      (b)   the presence of other road users which require the driver's attention

      (c)   to maintain the distances to surrounding road users and infrastructure

      (d)   to maintain the correct lane

      The patterns and symbols shall be explained in the owner's handbook.

5.35.2.   **The only symbols and patterns that may be used for the Driver Assistance Projection, and their associated underlying conditions, are listed in Annex [16].**

5.35.3.   **It shall be always possible to manually deactivate and reactivate the system which operates the Driver Assistant Projection.**

5.35.4.   **The projected symbols and patterns shall no longer be projected when their associated underlying conditions allowing them to be shown do not exist anymore.**

5.35.5.   **The projected symbols and patterns shall stop flashing when their associated underlying conditions allowing them to flash do not exist anymore.**

5.35.6. **The Driver Assistance Projection shall be deactivated automatically in case of an electrically detectable failure of the system that affects the visual information."**

Paragraph 6.22.9.2.4., amend to read:

"6.22.9.2.4. To verify that the adaptation of the main-beam, **including Driver Assistance Projection**, does not cause any discomfort, distraction or glare, neither to the driver nor to oncoming and preceding vehicles, the technical service shall perform a test drive according to paragraph 2. in Annex 12. This shall include any situation relevant to the system control on the basis of the applicant's description. The performance of the adaptation of the main beam shall be documented and checked against the applicant's description. Any obvious malfunctioning shall be contested (e.g. excessive angular movement or flicker)."

Add a new paragraph 6.22.9.3.2. and its subparagraphs to read:

"**6.22.9.3.2.** **The adaptive main beam may produce the Driver Assistance Projection in order to warn the driver appropriately regarding special traffic situations or conditions.**

6.22.9.3.2.1. **The lateral distance from the outer edges of the Driver Assistance Projection with respect to the trajectory of the centre of gravity of the vehicle shall not be more than 1,250 mm. This shall be demonstrated by the manufacturer by calculation or by other means accepted by the Type Approval Authority.**

6.22.9.3.2.2. **Driver Assistance Projection shall not interfere with information displayed by the Field of Vision Assistant as defined in UN Regulation No. 125.**

6.22.9.3.2.3. **No ~~Flashing~~ flashing ~~and/or transforming~~ nor transforming of driver assistance projections is ~~not~~ permitted, unless expressly allowed for the situations described in Annex [16].**

No flashing nor transforming of driver assistance projections is permitted

6.22.9.3.2.4. **Driver Assistance Projection shall not operate when the windshield wiper is switched ON and its continuous operation has occurred for a period of at least two minutes."**

In Annex 1, item 9.22., amend to read:

"9.22. Adaptive front lighting system (AFS): yes/no[2]

9.22.1. **Main-beam ADB** **yes/no[2]**

9.22.1.1. **Main-beam ADB + Driver Assistance Projection** **yes/no[2] "**
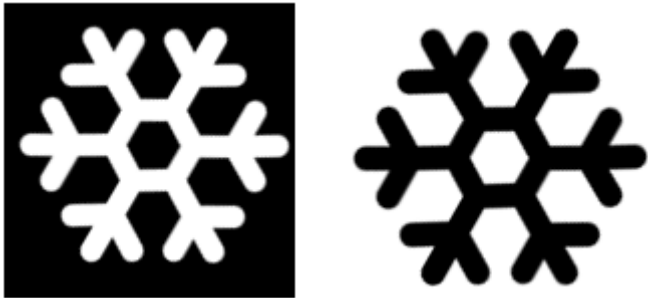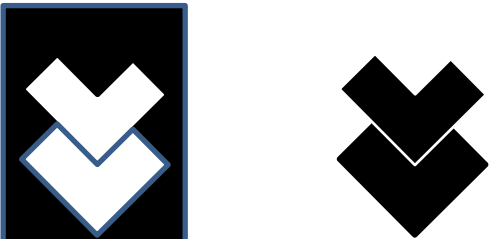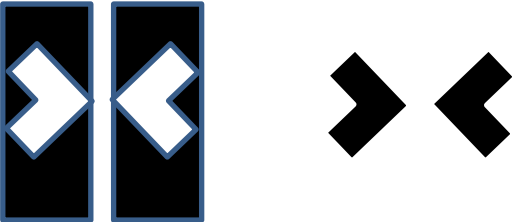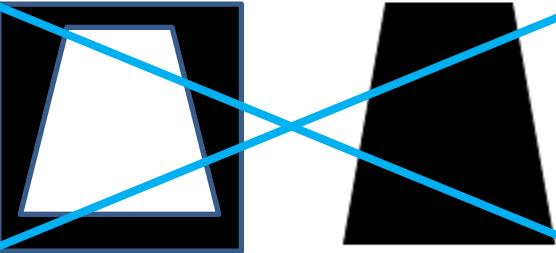
Add a new paragraph 2.8. in Annex 12; to read:

"**2.8.** **For the test sections A, B, C and E in the table above the engineers conducting the tests shall evaluate Driver Assistance Projection if installed."**

Add a new Annex [16] to read:

"Annex [16]

Symbols and patterns for the use as Driver Assistance Projections and Explanations of the Warnings/Highlights

Symbols and Pattern	*Use case*	*Conditions and remarks*
	Slippery road warning	**Shall not flash**
	Risk of collision warning	**Triggered when the relative speed is larger than 30 km/h and Risk of Collision Time is less than 1.4 s.** **Flashing at 4.0 hz +/- 1.0 hz allowed.**
	Wrong way warning	**Activated when the vehicle is entering a one-way road or a highway in opposite direction.** **Flashing at 4.0 hz +/- 1.0 hz allowed.**
	Lane keeping assist warning	**Activated when the vehicle unintentionally exits its lane.** **Shall not flash.**
	~~Predicted trajectory~~	~~May be transforming according to the predicted trajectory of the vehicle.~~ ~~Shall not flash~~

"

B.   New Supplement [4] to UN Regulation No. 149

Add a new paragraph 3.1.3.4. to read:

"**3.1.3.4.   In the case of Driver Assistance Projection according to UN Regulation No. 48, it shall specify the size (horizontal and vertical angular limits) of the zone used for performing said projections.**"

Renumber existing paragraphs 3.1.3.4. to 3.1.3.7. accordingly.

Add a new paragraph 5.3.3.8. and its subparagraph to read:

"**5.3.3.8.   The Driver Assistance Projection according to UN Regulation No. 48, paragraph 6.22.9.3.2., may be part of the driving-beam light distribution within a zone limited by the following angles:**

vertically: - 1.2° and below

horizontally: ± 25°

The Driver Assistance Projection may be produced by modifying the beam pattern in the zone defined above, where the luminous intensity in any point of the entire driving beam shall not exceed the maximum value (IM) according to paragraph 5.1.3.5. and not less than the minimum intensities prescribed in Table 15 Part B.

5.3.3.8.1.   The colour of the light emitted for Driver Assistance Projection shall be white."

Justification

1.   Since the last GRE, Japan participated in the GTB special session that has been established to further study the requirements for driver assistance projections, thus contributing to the study of requirements for driver assistance projections.

2.   Japan has expressed some concerns in connection with the realization of driver assistance projections, most of which were solved at the GTB special session and by subsequent adjustments. However, one concern with regard to flashing and transforming of symbols remained at WP29/GRE/2021/18.

3.   The fact that this concern is remaining has been shared with the GTB before the 85th GRE. The GTB took into consideration our intentions and made an additional proposal of GRE-85-20. However, because grounds for concern are still remaining, Japan proposes an informal document for the purpose of solving this concern.

*Paragraph **6.22.9.3.2.3.***

4.1.   The wording "and/or transforming" in 6.22.9.3.2.3. has been returned and some editorial corrections have been made, for example, changing "and/or.... is not permitted" to "No .... nor .... is permitted" for the purpose of clarification. As described in 4.8 under Justification of the GTB's proposal, this provision was to introduce a general provision to forbid the flashing and the transformation of symbols. However, the "transforming" has been deleted from 6.22.9.3.2.3. In order to make it consistent, the "transforming" was added.

4.2.   If there is no provision to forbid in principle the transformation in this general provision, it can be interpreted that the transformation is not subject to regulation under a certain condition, for example, lamps under park conditions. This provision to forbid the transformation in principle is important because there is a possibility that some manufacturers may put into market driver assistance projection with a transforming function.

Annex [16]

4.3.   The "Predicted trajectory" should be deleted because it should be considered together with the transformation as a set. Moreover, with respect to the transformation that is strongly requested by the GTB in the next phase, the prohibition of transformation in paragraph 6.22.9.3.2.3. is an important foundation and a prerequisite, considering that the transformation would be proven to have no impact on road traffic and thus be permitted.

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