

REGULATION No. 48

(Installation of lighting and light-signalling devices)

Draft proposal for amendments to regulation No. 48

A. Proposal

Insert a new Paragraph 6.1.9.3., to read

“6.1.9.3. Bend lighting produced by the main-beam headlamp shall be activated only if the vehicle is in forward motion; this shall not apply if bend lighting is produced for a right turn in right hand traffic (left turn in left hand traffic).”

B. Justification

The proposal is intended to apply the same principle to the bending light produced by the main beam as to the bending light produced by the dipped beam, specified in paragraph 6.2.9.

Paragraph 6.2.9. read;

“ 6.2.9. Other requirements

If bend lighting is produced by a horizontal movement of the whole beam or the kink of the elbow of the cut-off, it shall be activated only if the vehicle is in forward motion; this shall not apply if bend lighting is produced for a right turn in right hand traffic (left turn in left hand traffic) ”

Whereas, there are no such requirements for the bending light produced by the main beam.

C. Measurement of illumination of bend lighting produced by main-beam headlamp headlamp

1. Objective

To measure illumination of bend lighting produced by main-beam headlamp and dipped-beam headlamp at the eye-points of pedestrians and on-coming drivers according to swivel angle

2. Test Method

2.1 Headlamp

Main-beam headlamp and dipped-beam headlamp were allowed to swivel notwithstanding the requirements in ECE Reg. 48 as the steering wheel turned .

2.2 Test layout

With a illumination meter, measure illumination at the eye-points of pedestrians and oncoming drivers according to swivel angle of main-beam headlamp and dipped-beam headlamp while a test vehicle was at rest at the intersection in Fig.1.



Figure 1 Test layout

3. Test results

3.1 Illumination at the eye-points (lx)

| | Eye point of oncoming vehicle driver | | | Eye point of pedestrian #1 | | | Eye point of pedestrian #2 | | |
|--------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------------|---------------------------|---------------------------------|----------------------------------|---------------------------|---------------------------------|
| | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) |
| Dipped beam | 1.1lx | 0.36lx | 0.2lx | 0.42lx | 0.24lx | 0.2lx | 0.6lx | 0.69lx | 0.77lx |
| Main beam | 11.45lx | 8.6lx | 2.05lx | 3.27lx | 0.9lx | 0.45lx | 3.26lx | 8.14lx | 7.82lx |

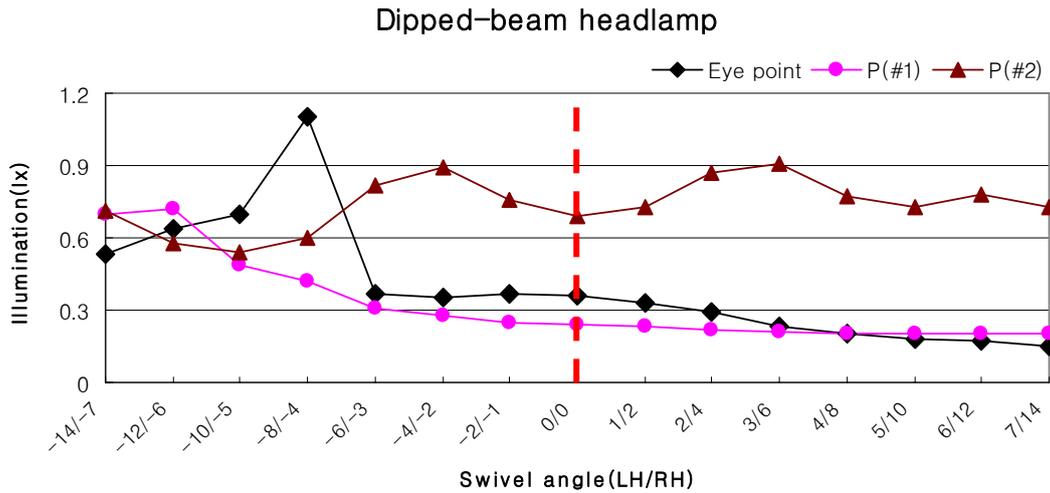


Figure 2 Illumination vs swivel angle

In case of dipped-beam headlamp while a vehicle was at rest in right hand traffic, the measured value was 0.36 lx at the LH(0°), RH(0°) of swivel angle. The measured values at the eye points of an oncoming driver were tended to decrease as the headlamp turned to the right. However, the measured values at the eye points of oncoming driver were tended to increase as the headlamp turned to the left. The fig. 2 showed the illumination vs swivel angle.

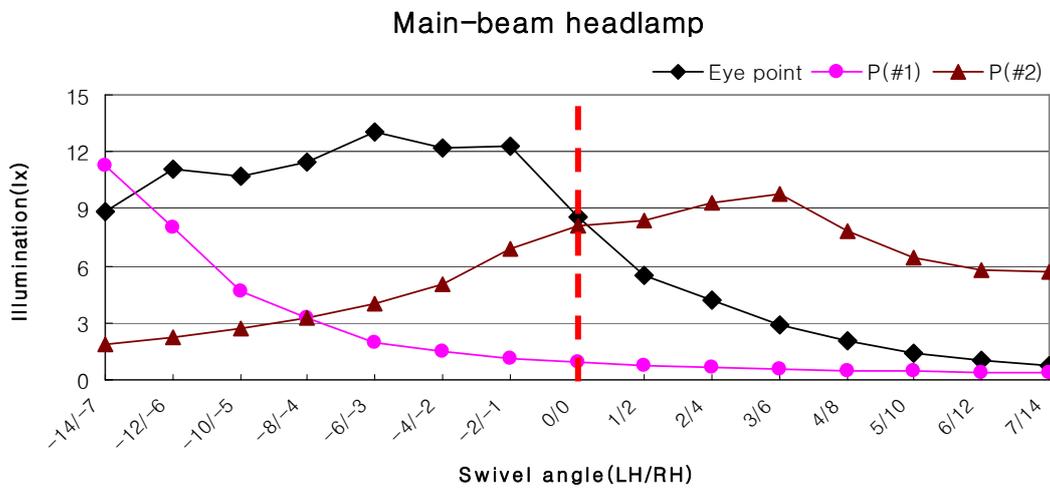


Figure 3 Illumination vs swivel angle

In case of main-beam headlamp while a vehicle was at rest in right hand traffic, the measured value was 8.6 lx at the LH(0°), RH(0°) of swivel angle. The measured values at the eye points of an oncoming driver were tended to decrease as the headlamp turned to the right. However, the measured values at the eye points of oncoming driver were tended to increase as the headlamp turned to the left. The fig. 3 showed the illumination vs swivel angle.

3.2 Deboer scale

| | Eye point of oncoming vehicle driver | | | Eye point of pedestrian #1 | | | Eye point of pedestrian #2 | | |
|--------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------------|---------------------------|---------------------------------|----------------------------------|---------------------------|---------------------------------|
| | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) | Turn to left (LH:-8°, RH:-4°) | Neutral (LH:0°, RH:0°) | Turn to right (LH:4°, RH:8°) |
| Dipped beam | 3.64 | 4.61 | 5.13 | 4.48 | 4.97 | 5.12 | 4.17 | 4.05 | 3.95 |
| Main beam | 1.61 | 1.86 | 3.1 | 2.7 | 3.82 | 4.42 | 2.7 | 1.91 | 1.94 |

Deboer scale was 3.64 in case of dipped-beam headlamp while a vehicle was at rest in Right hand traffic, while that was, 1.61 in case of main-beam headlamp. This table showed that bend lighting produced by main-beam headlamp caused glare to the oncoming driver when main-beam headlamp was turned to the left.

4. Discussion

Paragraph 6.2.9. of Reg. 48 forbids dipped-beam headlamp from turning to the left in right hand traffic because bend lighting produced by dipped-beam headlamp caused glare to the oncoming driver in Figure 2. For the same reason, a similar requirement is proposed to be inserted for the main-beam headlamp.

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