

Proposal for amendments to Regulation No. 48

Note: The text reproduced below was prepared by the expert from the Netherlands and proposes to introduce mandatory automatic switching for the dipped-beam headlamps, including the addition of corresponding threshold values for the ambient lighting conditions.

A. PROPOSAL

Paragraph 6.2.7., amend to read:

"6.2.7. Electrical connections

The control for responsible for type approval.

Dipped-beam headlamps ~~may~~ **shall** be switched ON ~~or~~ **and** OFF automatically 1/ **according to ambient lighting conditions. The following conditions shall apply:**

AUTOMATIC SWITCHING CONDITIONS DIPPED-BEAM HEADLAMPS <u>2/</u>		
Ambient light (outside the vehicle) on a horizontal surface	Dipped-beam headlamps	Response time
less than 1,000 lux	ON	fast <u>3/</u>
between 1,000 lux and [2,000] lux	at manufacturer's discretion	as applicable <u>3/</u> <u>4/</u>
more than [2,000] lux	OFF	slow <u>4/</u>

However, it shall be always possible to switch these dipped-beam headlamps ON and OFF manually."

Insert new footnotes: 1/ **This provision shall apply as from [42] months for vehicles of categories M₁ and N₁ and [60] months for vehicles of other categories after the official date of entry into force of the 04 series of amendments. Until this date automatic switching of the dipped-beam headlamps remains optional.**

2/ **Compliance with these conditions may be demonstrated, by the manufacturer, by simulation or by other means of verification accepted by the authority responsible for type approval.**

3/ **This requirement shall be deemed to have been met when the dipped-beam headlamps are switched ON in no more than [1] second. In case of dipped-beam headlamps equipped with gas-**

discharge light sources, the time until the starting of the light source (ignitor starts) shall not be more than [1] second.

4/ This requirement shall be deemed to have been met when the dipped-beam headlamps are switched OFF in more than [60] seconds, but no more than [300] seconds.

B. BACKGROUND

In view of the introduction of provisions for mandatory fitment of daytime running lamps into the Regulation, there has been a continued discussion on the issue of also mandating the automatic switching between the dipped-beam headlamps and the daytime running lamps, i.e. effectively the automatic switching, ON and OFF, of the dipped-beam headlamps.

It already became clear that industry (vehicle manufacturers and their suppliers) needs more time in order to be able to fully comply with such an additional mandatory provision. But it also has become clear that a minimum threshold value regarding ambient lighting conditions is needed, in order to properly equip vehicles with the intended automatic switching.

C. JUSTIFICATION

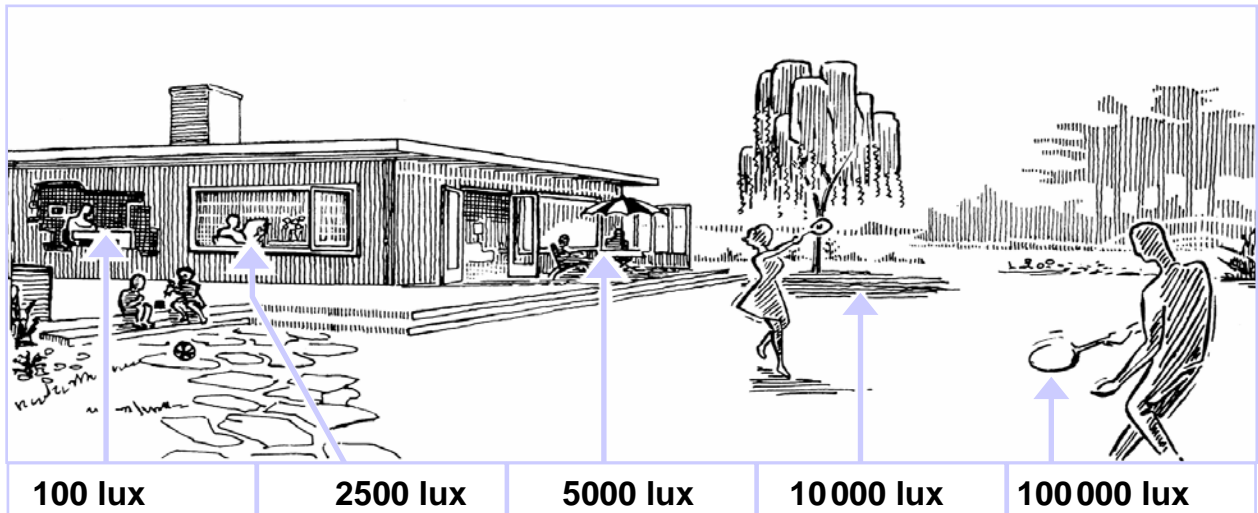
If a vehicle is not equipped with automatic switching between the dipped-beam headlamps and the daytime running lamps, when driving e.g. at night or in tunnels the driver of the vehicle might not realize that the daytime running lamps are switched ON and not the required dipped-beam headlamps. This would lead to an increased risk that such vehicles would glare other road users and at the same time would drive around without rear lights.

Moreover, the environmental advantage of the daytime running lamps compared to the use of the dipped-beam headlamps during daytime is at stake, when drivers do not switch back from dipped-beam headlamps to daytime running lamps after having driven through a tunnel or other areas requiring the dipped-beam headlamps to be switched ON. Thus the CO₂ emissions would increase unnecessarily.

This proposal aims to make the automatic switching, ON and OFF, of the dipped-beam headlamps mandatory. It also introduces a minimum level for the ambient lighting conditions, thus giving industry a threshold for their sensor systems. When the ambient light level is less than 1,000 lux, indicating dusk, night or other reduced light conditions, the dipped-beam headlamps shall be switched ON automatically (and subsequently the daytime running lamps are switched OFF). For instance, many Canadian vehicles have ambient lighting sensors that switch from daytime running lamps to headlights automatically when light levels fall (ambient light on a horizontal surface less than 1000 lux according to SAE J2087) [**Reference:** report by Michael Paine, “A review of daytime running lights”, page 26, section “Control with light sensors”; June 2003].

In addition it is proposed to also introduce a maximum level for ambient lighting conditions, above which the dipped-beam headlamps must be switched OFF automatically (and subsequently the daytime running lamps are switched ON). The value of 2,000 lux is a suggested value, hence placed between square brackets.

* **Typical illuminance levels indoors and outdoors (noon on a sunny day)**



* **Typical daylight intensity in different conditions**
 (Sky light intensity at night in various conditions is given for comparison)

Illuminance	Example
0.0001 lux	Moonless overcast night sky
0.001 lux	Moonless clear night sky
0.25 lux	Full Moon on a clear night
400 lux	Sunrise or sunset on a clear day
3000 lux	Overcast day
32000 lux	Sunlight on an average day (min)
100000 lux	Sunlight on an average day (max)

The switching conditions between the proposed minimum and maximum level for ambient lighting conditions are left at the manufacturer’s discretion. Not only will this cater for hysteresis in the sensor systems, it will also help avoid unwanted rapid ON and OFF switching of the lamps concerned (i.e. the dipped-beam headlamps respectively the daytime running lamps).

Furthermore, this proposal will effectively give industry additional time before automatic switching will become mandatory. However, it is suggested to do this through a separate footnote, rather than amending the Transitional Provisions. It also clarifies that during this additional period automatic switching remains optional.

Regarding the switching conditions, it should be pointed out that the situation of the switching ON of the dipped-beam headlamps, under low ambient lighting conditions, is the most critical one. Under low ambient lighting conditions daytime running lamps would cause glare to other road users, whilst not offering sufficient illumination for the driver of the vehicle in question, hence potentially be detrimental to safety. It is clear that the most extreme situation in this respect would arise when driving at higher speeds, in full daylight, into an unlit tunnel.

Therefore, it is most important that the automatic switching ON of dipped-beam headlamps, when required, should happen as quickly as possible. This critical issue is deemed to be addressed satisfactorily if the response time for switching ON these lamps is no more than 1 second. At a driving speed of 90 km/h this would be equivalent to a distance not more than 25 meters, which seems to be an acceptable gap. However, the value of 1 second may be subject to further debate; hence it is placed between square brackets.

Lastly, the automatic switching OFF of the dipped-beam headlamps needs not to happen as quickly as possible, since it is not so critical. However, in order to further help avoiding rapid successive ON and OFF switching, it could in fact be desirable to happen relatively slow. This proposal merely suggests allowing at least 1 minute (60 seconds), but no more than 5 minutes (300 seconds); hence these values are also placed between square brackets.

Hopefully this proposal will successfully contribute to the discussions on the issues concerning the automatic switching between the dipped-beam headlamps and the daytime running lamps.
