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**ECONOMIC COMMISSION FOR EUROPE**

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World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Lighting and Light-Signalling (GRE)  
(Fifty-second session, 30 March - 2 April 2004,  
agenda item 3.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 37  
(Filament lamps)

Transmitted by the expert from the Working Party "Brussels 1952" (GTB)

Note: The text reproduced below was prepared by the expert from GTB, to introduce into the Regulation new sheets for filament lamps, intended to be used in daytime running lamps with photometric characteristics described in a proposal also submitted by GTB for draft amendments to Regulation No. 87. For that purpose, new sheets are being introduced for filament lamp H13(A) to replace the existing ones, and there are new sheets for filament lamp P13W. It should be noted that some values are in square brackets; the final specifications should be inserted after GRE has taken a decision on the amendments to Regulation No. 87. The text is based upon:

- Revision 3 of Regulation No. 37, including Supplement 23 to the 03 series of amendments (TRANS/WP.29/935)
- the proposal for draft Supplement 24 to the 03 series of amendments to Regulation No. 37, to be submitted to the one-hundred-and-thirty-second WP.29 session (TRANS/WP.29/2004/3)

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Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

**A. PROPOSAL**

Text of the Regulation,

Insert a new paragraph 2.1.2.5., to read:

"2.1.2.5. halogen"

Paragraph 2.3.3., delete the footnote pertinent to this paragraph.

Paragraph 3.10., amend to read (deletion of the last sentence):

"3.10. Standard filament lamps

Additional requirements for standard (étalon) filament lamps are given on the relevant data sheets of annex 1.

Bulbs of standard (étalon) filament lamps emitting white light shall not alter the CIE trichromatic coordinates of a luminous source having a colour temperature of 2856 K by more than 0.010 units in the x and/or y direction.

For standard (étalon) filament lamps emitting amber light, changes of the bulb temperature shall not affect the luminous flux which might impair photometric measurements of signalling devices"

Annex 1,

List of categories of filament lamps, amend to read:

".....

Category	Sheet number(s)
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.....

H21W	H21W/1 to 2
P13W	P13W1 to 3
P19W	P19W/1 to 3

....."

List of sheets for filament lamps, amend to read:

".....

Sheet number(s)
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.....

HS5/1 to 4
P13W/1 to 3
P19W/1 to 3

....."

Sheets H13/1 to 4, replace by new sheets H13/1 to 4; (see next pages).

Insert new sheets P13W/1 to 3 (between sheet HS5/4 and sheet P19W/1 as indicated in the "List of sheets" above), to read: (see next pages).

Annex 2, item 9, amend to read:

"..... light emitted: White/selective-yellow/amber 2/  
Halogen filament lamp: yes/no 2"

The drawings are intended only to illustrate the essential dimensions (in mm) of the filament lamp

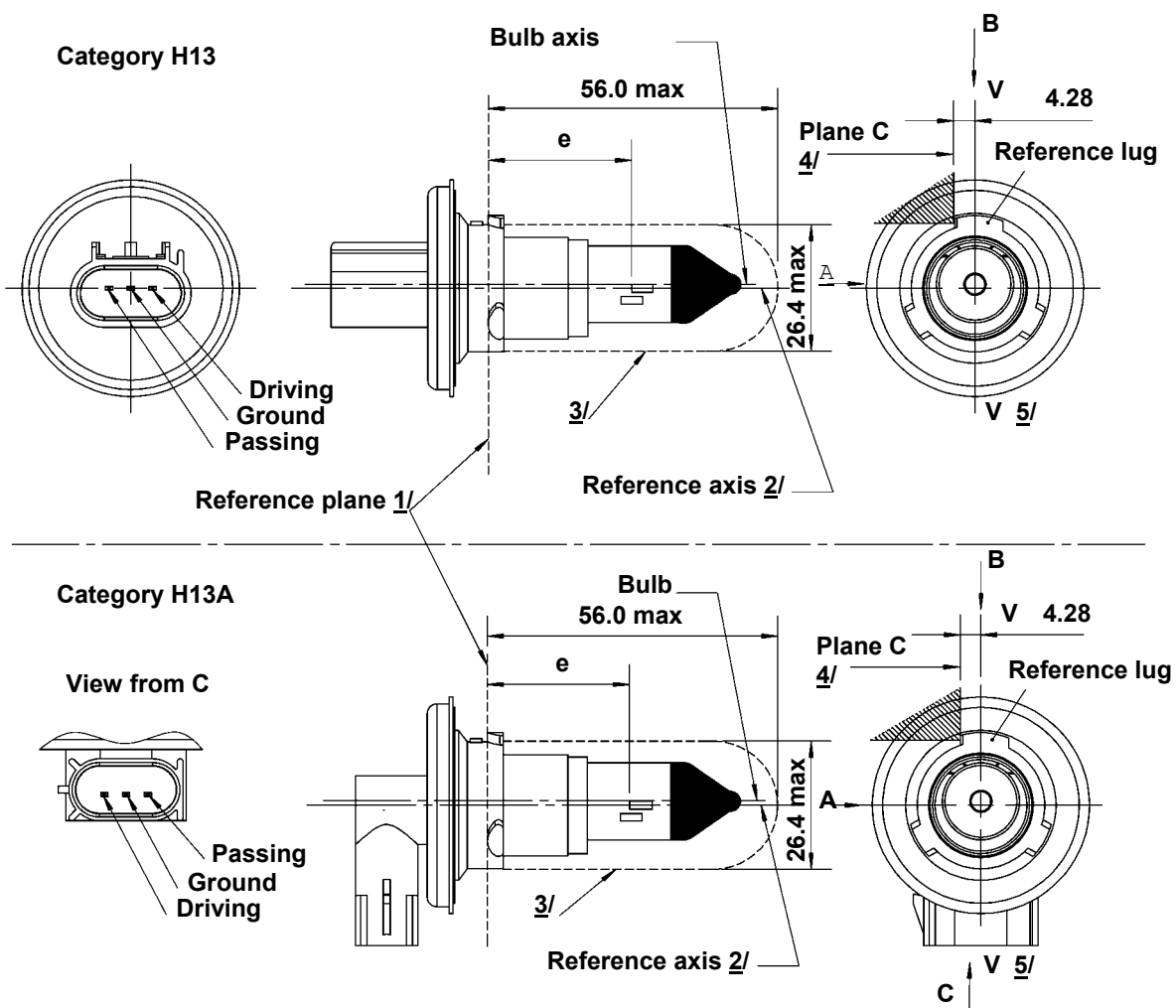


Figure 1 Main drawing

- 1/ The reference plane is the plane formed by the underside of the three radiused tabs of the cap.
- 2/ The reference axis is perpendicular to the reference plane and crosses the intersection of the two perpendiculars as indicated in Figure 2 on sheet H13/2.
- 3/ Glass bulb and supports shall not exceed the envelope as indicated. The envelope is concentric to the reference axis.
- 4/ The filament lamp shall be rotated in the measuring holder until the reference lug contacts plane C of the holder.
- 5/ Plane V-V is the plane perpendicular to the reference plane passing through the reference axis and parallel to plane C.

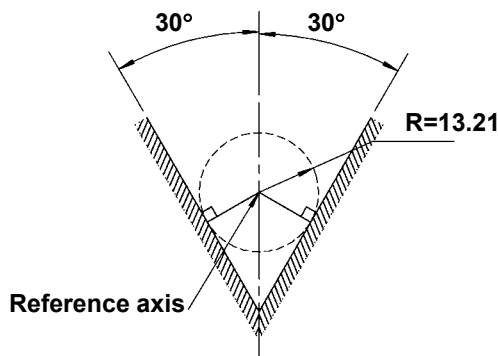


Figure 2  
Definition of reference axis 2/

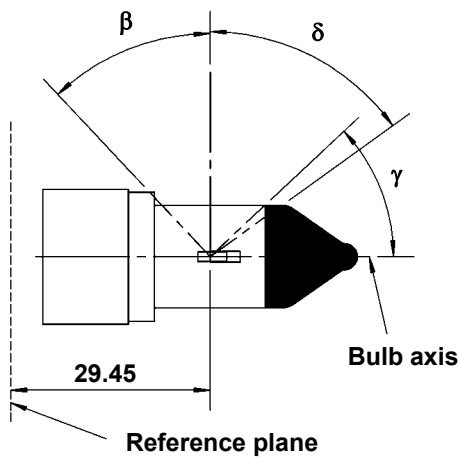


Figure 3  
Undistorted area 6/  
and opaque coating 7/

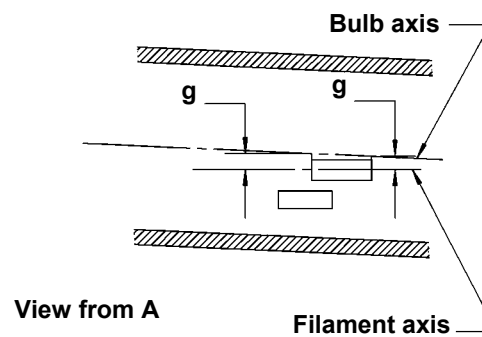
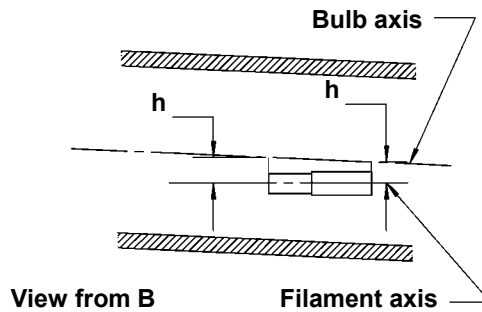


Figure 4  
Bulb offset 8/

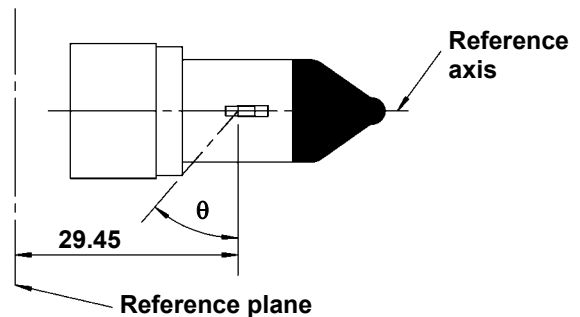


Figure 5  
Light blocking toward cap 9/

- 6/ Glass bulb shall be optically distortion-free axially within the angles  $\beta$  and  $\delta$ . This requirement applies to the whole bulb circumference within the angles  $\beta$  and  $\delta$ .
- 7/ The opaque coating shall extend to angle  $\gamma$  and shall extend at least to the cylindrical part of the bulb on the whole bulb circumference.
- 8/ Offset of passing-beam filament in relation to the bulb axis is measured in two planes parallel to the reference plane where the projection of the outside end turns nearest to and farthest from the reference plane crosses the passing-beam filament axis.
- 9/ Light shall be blocked over the cap end of the bulb extending to angle  $\theta$ . This requirement applies in all directions around the reference axis.

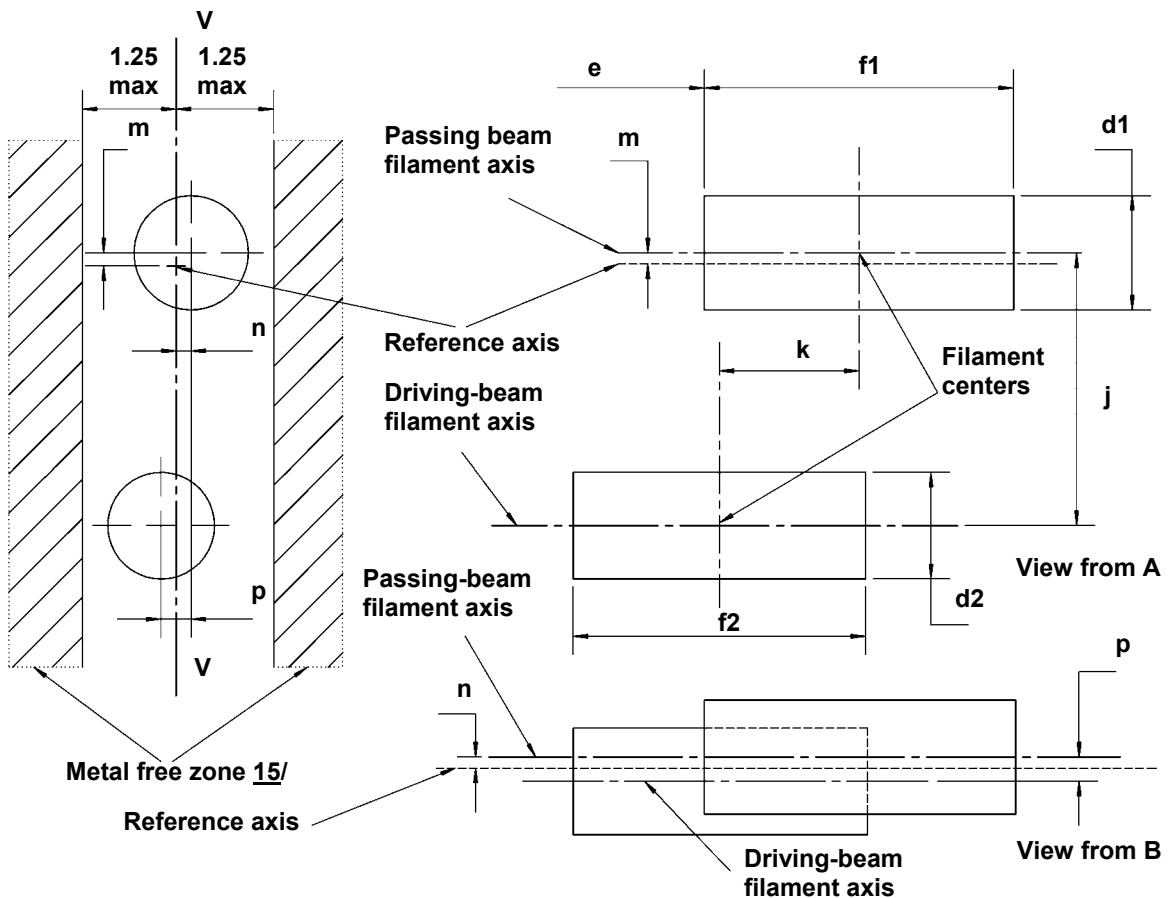


Figure 6  
Position and dimensions of filaments 10/ 11/ 12/ 13/ 14/

- 10/ Dimensions j, k and p are measured from the centre of the passing-beam filament to the centre of the driving-beam filament.
- 11/ Dimensions m and n are measured from the reference axis to the centre of the passing-beam filament.
- 12/ Both filaments axis are to be held within a 2° tilt with respect to the reference axis about the centre of the respective filament.
- 13/ Note concerning the filament diameters.
  - For the same manufacturer, the design filament diameter of standard (etalon) filament lamp and filament lamp of normal production shall be the same.
- 14/ For both the driving-beam and the passing-beam filament distortion shall not exceed +/- 5% of filament diameter from a cylinder.
- 15/ The metal free zone limits the location of lead wires within the optical path. No metal parts shall be located in the shaded area as seen in Figure 6.

## CATEGORIES H13 AND H13A

## Sheet H13/4

Dimensions in mm			Tolerance			
			Filaments lamps of normal production		Standard filament lamp	
d1	<u>13/ 17/</u>	1.8 max.	-		-	
d2	<u>13/ 17/</u>	1.8 max.	-		-	
e	<u>16/</u>	29.45	± 0.20		± 0.10	
f1	<u>16/</u>	4.6	± 0.50		± 0.25	
f2	<u>16/</u>	4.6	± 0.50		± 0.25	
g	<u>8/ 17/</u>	0.5 d1	± 0.40		± 0.20	
h	<u>8/</u>	0	± 0.30		± 0.15	
j	<u>10/</u>	2.5	± 0.20		± 0.10	
k	<u>10/</u>	2.0	± 0.20		± 0.10	
m	<u>11/</u>	0	± 0.20		± 0.13	
n	<u>11/</u>	0	± 0.20		± 0.13	
p	<u>10/</u>	0	± 0.08		± 0.08	
β		42° min.	-		-	
δ		52° min.	-		-	
γ		43°	+0° / -5°		+0° / -5°	
θ	<u>9/</u>	41°	± 4°		± 4°	
Cap:	H13: P26.4t H13A: PJ26.4t	in accordance with IEC Publication 60061 (sheet 7004-128-2)				
ELECTRICAL AND PHOTOMETRIC CHARACTERISTICS <u>18/</u>						
Rated values	Volts	12			12	
	Watts	55	60	55	60	
Test voltage	Volts	13.2			13.2	
Objective values	Watts	68 max.	75 max.	68 max.	75 max.	
	Luminous flux	1100 ± 15%	1700 ± 15%			
Reference luminous flux: 800/1200 lm at approximately 12 V						

16/ The ends of the filament are defined as the points where, when the viewing direction is direction A as shown on sheet H13/1, the projection of the outside of the end turns crosses the filament axis.

17/ d1 is the actual diameter of the passing-beam filament. d2 is the actual diameter of the driving-beam filament.

18/ The values indicated in the left-hand columns relate to the passing-beam filament and those indicated in the right-hand columns to the driving-beam filament.

The drawings are intended only to illustrate the essential dimensions (in mm) of the filament lamp

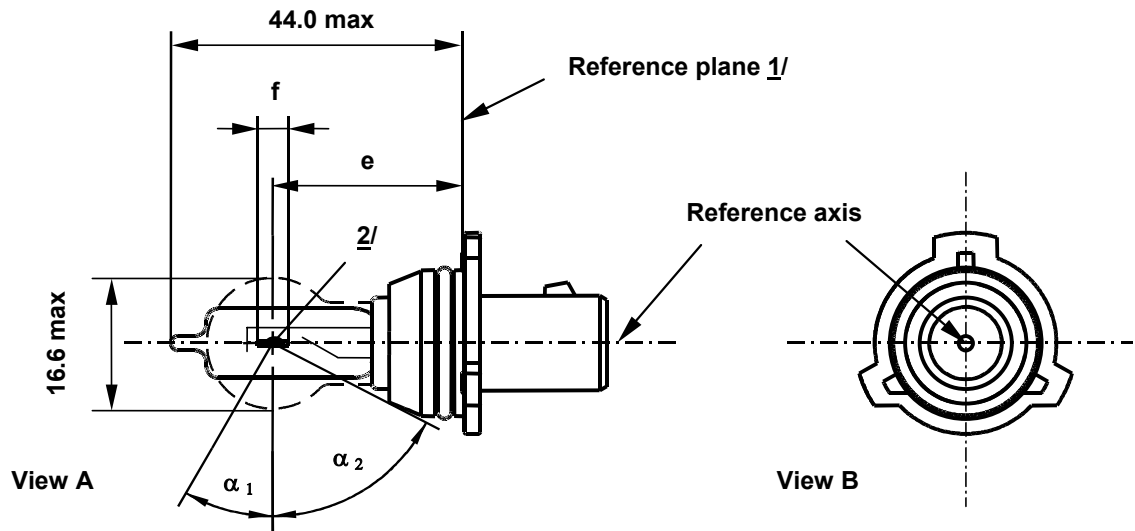


Figure 1 – Main drawing

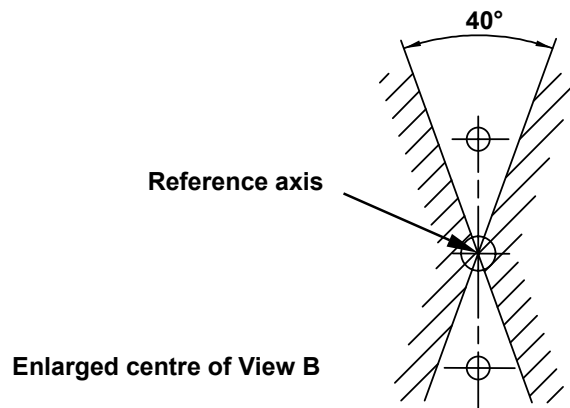


Figure 2 – Metal free zone 3/

- 1/ The reference plane is defined by the meeting points of the cap-holder fit.
- 2/ No actual filament diameter restrictions apply but the objective is  $d_{max} = 1.0$  mm.
- 3/ No opaque parts other than filament turns shall be located in the shaded area indicated in figure 2. This applies to the rotational body within the angles  $\alpha_1 + \alpha_2$ .



**CATEGORY P13W**

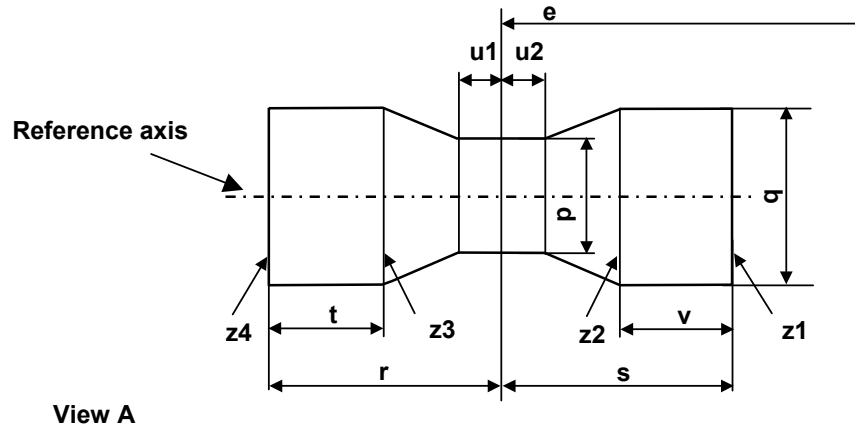
**Sheet P13W/2**

Dimensions in mm		Filament lamps of normal production		Standard filament lamp
e	<u>5/</u>	25.0	<u>4/</u>	25.0 ± 0.25
f	<u>5/</u>	[4.3]	<u>4/</u>	[4.3] ± 0.25
$\alpha_1$	<u>6/</u>	30.0° min.		30.0° min.
$\alpha_2$	<u>6/</u>	58.0° min.		58.0° min.
Cap [PG18.5]		in accordance with IEC Publication 60061 (sheet 7004-xxx-1)		
<b>ELECTRICAL AND PHOTOMETRIC CHARACTERISTICS</b>				
Rated values	Voltage	V	12	12
	Wattage	W	13	13
Test voltage		V	13.5	13.5
Objective values	Wattage	W	[19] max.	[19] max.
	Luminous flux	lm	[250]	
		±	+15% [/ -20%]	
Reference luminous flux at approximately 13.5V				[250] lm

- 4/ To be checked by means of a "Box-System"; sheet P13W/3.
- 5/ The ends of the filament are defined as the points where, when the viewing direction is perpendicular to the plane through the filament lead-in wires, the projection of the outside of the end turns crosses the filament axis.
- 6/ No part of the cap beyond the reference plane shall interfere with angle  $\alpha_2$  as shown in figure 1 on sheet P13W/1. The bulb shall be optically distortion free within the angles  $\alpha_1 + \alpha_2$ . These requirements apply to the whole bulb circumference.

Screen projection requirements

This test is used to determine, by checking whether the filament is correctly positioned relative to the reference axis and reference plane, whether a filament lamp complies with the requirements.



	p	q	u1,u2	r,s	t,v
Filament lamps of normal production	1.7	1.9	0.3	[2.6]	0.9
Standard filament lamps	1.5	1.7	0.25	[2.45]	0.6

The filament position is checked in two mutually perpendicular planes, one of them being the plane through the lead-in wires.

The ends of the filament as defined on sheet P13W/2, note 4/, shall lie between Z1 and Z2 and between the lines Z3 and Z4.

The filament shall lie entirely within the limits shown.

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## B. JUSTIFICATION

The proposed draft amendments concern several items.

### 1. Introduction of P13W

In view of the increased attention to Daytime Running Lights, a new filament light source was designed for use in Regulation No. 87 lamps. Characteristics of these light sources were significantly improved as compared to existing filament light sources because of their lower power consumption, their very high lifetime, which is car life designed, and their high precision dimensions, which make them suitable for all kinds of lamp reflectors.

A rough calculation (in nominal or rated wattages) shows more than 80 per cent reduction of power consumption.

Low beam headlamps:	2*55W	=	110W
Position lamps, license plate etc:			40W
Total:			<b>150W</b>
compared to:			
DRL lamps only:	2*13W	=	<b>26W</b>

A proposal to amend also the footnote to paragraph 2.3.3., that would then read:

"Halogen filament lamps are filament lamps whose category starts with the letter "H"; Category P13W may be a halogen lamp as well." was replaced by the proposal to allow all filament lamps being halogen. See below.

### 2. Allowing all filament lamps being halogen

The proposed P13W is a light source that may be a normal filament light source or a halogen one. As a matter of fact two light source proposals were combined into one, which was a result of major standardization efforts. One difficulty left was the fact that halogen filament lamps are designated by the category "H" while a normal filament light source would be designated by the category "P".

A proposal was made to allow all filament lamps being halogen as a type within a category and under the condition of compliance to the existing UV test requirements of paragraph 3.7. and the light sources being marked with a "U". This proposal would also clarify the situation allowed by Regulation No. 37 where halogen versions of light sources are not designated by category "H" nor marked "U", nevertheless fulfilling UV-requirements.

3. Updating the requirements to standard amber filament lamps to current state of the art. The requirement to amber standard filament lamps reading "Moreover, the colour shall be in the lower part of the tolerance area." is subjective and dates from the time that cadmium was used. This requirement is no longer necessary and is hampering production of those lamps. It is proposed to delete this requirement.

### 4. Amendments H13 and H13A.

This proposal is made to maintain the specifications of H13 and H13A "harmonised" to those that are filed in the United States of America's NHTSA docket system.

5. Proposed amendments to Regulation No. 87 photometric requirements. Parallel to the proposal for introduction of the filament light source P13W, GTB also proposes amendments to the photometric requirements as specified by Regulation No. 87. This has consequences for the P13W specifications. Those parameter values that needed to be balanced again were put between square brackets [...] in this document, although approved by GTB. The earlier specifications, also approved by GTB, but tuned at the current Regulation No. 87 photometric requirements were as follows:

- Sheet P13W/2:

f	<u>5/</u>	3.9	<u>4/</u>	$3.9 \pm 0.2$
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Objective values	Wattage	W	18 max.	18 max.
	Luminous flux	lm	200	
		±	15%	
Reference luminous flux at approximately 13.5V				200 lm

- Sheet P13W/3:

	p	q	u1,u2	r,s	t,v
Filament lamps of normal production	1.7	1.9	0.3	2.4	0.9
Standard filament lamps	1.5	1.7	0.25	2.25	0.6