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INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations

Working Party on Lighting and Light-Signalling

Sixty-first session

Geneva, 30 March - 3 April 2009

Item 4(f) of the provisional agenda

REGULATION No. 48
(Installation of lighting and light-signalling devices)

Definition of apparent surface

Proposal for Draft Amendments */

Submitted by the expert from the Working Party "Brussels 1952"

The text reproduced below was prepared by the expert from the Working Party "Brussels 1952" (GTB), in order to revise and update the provisions concerning the definition of the apparent surface, its determination and application. The modifications to the current text of Regulation No. 48 are marked in bold or strikethrough characters.

*/ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

A. PROPOSAL

Insert new paragraph 2.8.1., to read:

"2.8.1. "Textured outer lens" or "Textured outer lens area" means all or part of an outer lens, designed to modify or influence the propagation of light from the light source(s), such that the light rays are significantly diverted from their original direction."

Paragraph 2.9.1., amend to read:

"2.9.1. Illuminating surface of a lighting ... are adjustable relative to one another, the mean adjustment should be used.

In **the case an of AFS is being** installed: where a lighting function is produced by two or more simultaneously operated lighting units on a given side of the vehicle, the individual illuminating surfaces, taken together, constitute the illuminating surface to be considered (for example, in the figure of paragraph 6. 22. 4. below, the individual illuminating surfaces of the lighting units 8, 9 and 11, regarded together and taking into account their respective location, constitute the illuminating surface to be considered for the right hand side of the vehicle)."

Paragraph 2.9.2., amend to read:

2.9.2. "Illuminating surface of a light-signalling device..... encloses a non-lighted surface, the illuminating surface may be considered to be the light emitting surface itself. (See e.g. examples C to E in Annex 3)"

Paragraph 2.10., amend to read:

"2. 10. The "apparent surface" for a defined direction of observation means, at the request of the manufacturer or his duly accredited representative, the orthogonal projection of:

either the boundary of the illuminating surface projected on the exterior surface of the lens (~~a-b~~);

or the light-emitting surface (~~c-d~~);

in a plane perpendicular to the direction of observation and tangential to the most exterior point of the lens. Different examples of the application of apparent surface can be found in Annex 3 to this Regulation."

Annex 3, amend to read (to be fully replaced):

"ANNEX 3

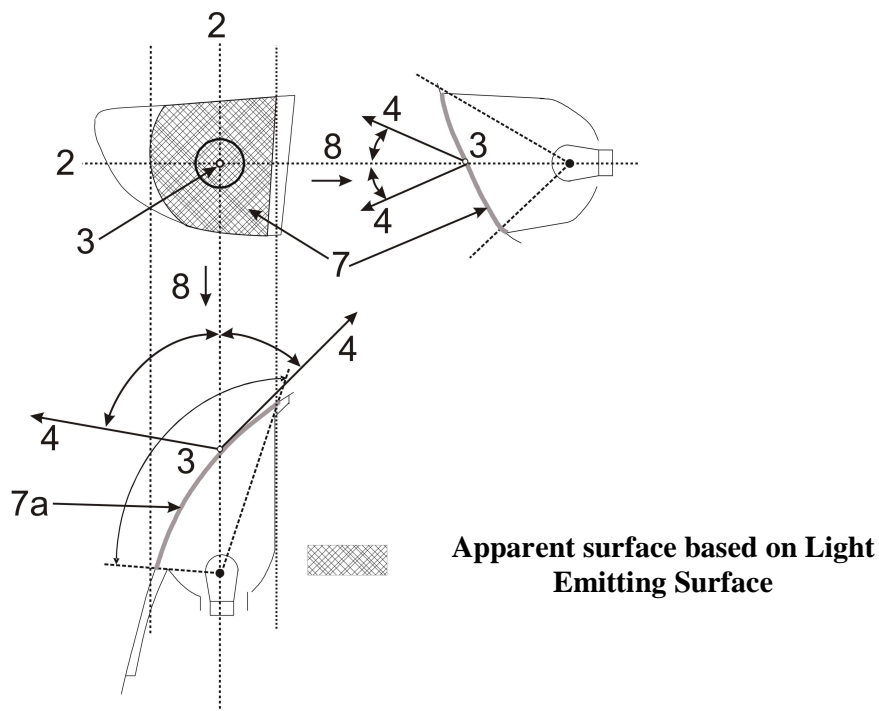
EXAMPLES OF LAMP SURFACES, AXES, CENTRES OF REFERENCE, AND ANGLES OF GEOMETRIC VISIBILITY

Actual lamp construction may be different from the examples shown.

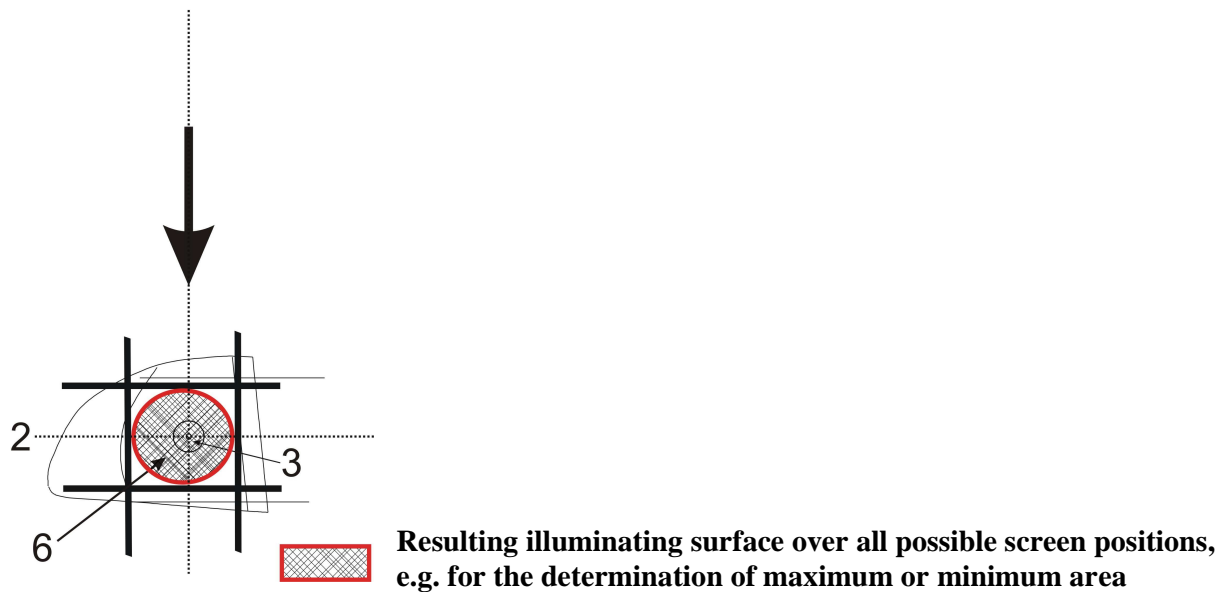
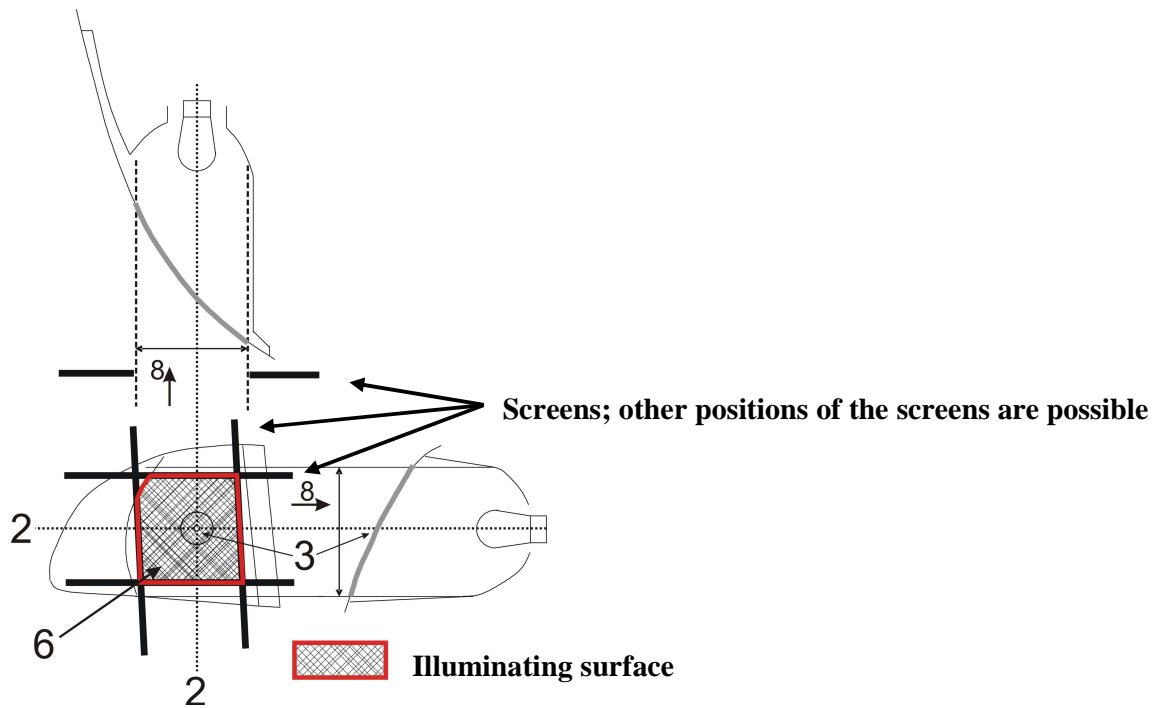
KEY for all examples in this Annex:

1.	Illuminating surface	8.	Direction of visibility
2.	Axis of reference	IO	Inner optical part
3.	Centre of reference	LG	Light guide
4.	Angle of geometric visibility	L	Outer lens
5.	Light-emitting surface	R	Reflector
6.	Apparent surface based on the illuminating surface	S	Light source
7a.	Apparent surface based on the light-emitting surface according to paragraph 2.8.a (with outer lens)	X	Not part of this function
7b.	Apparent surface based on the light-emitting surface according to paragraph 2.8.b (without outer lens)	F1	Function one
		F2	Function two

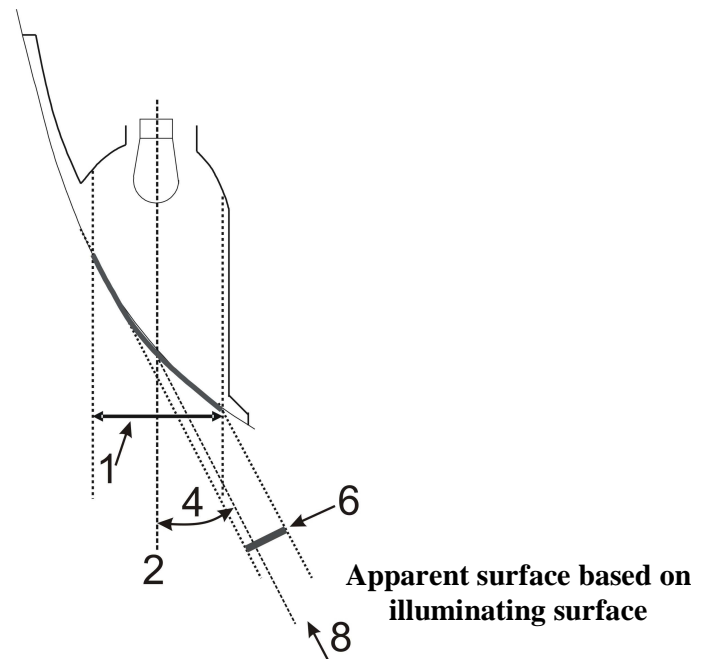
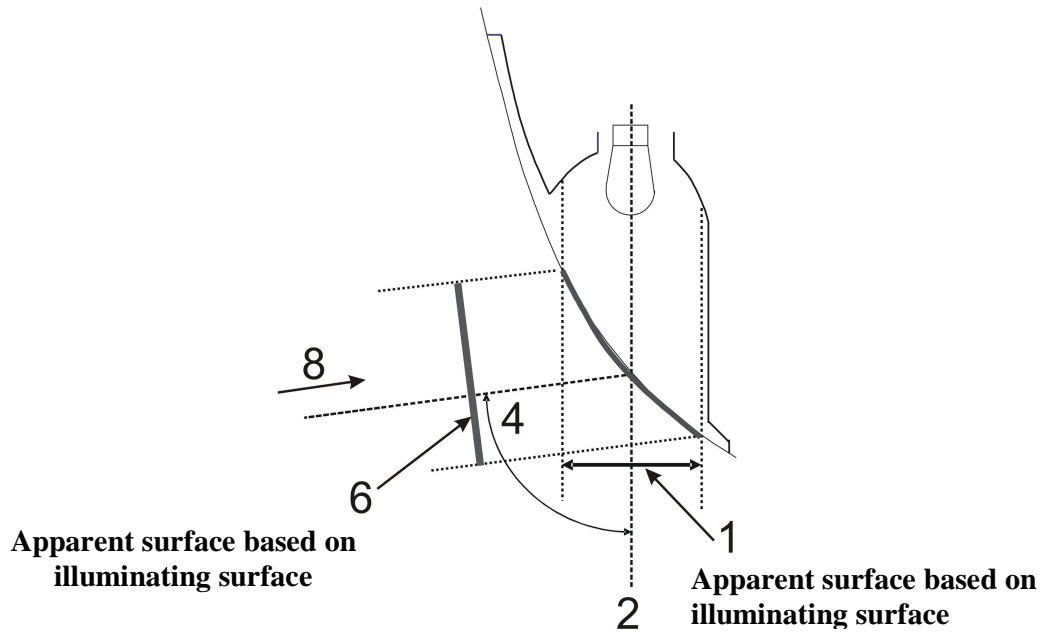
PART 1 - LIGHT EMITTING SURFACE OF A LIGHT-SIGNALLING DEVICE OTHER THAN A RETRO-REFLECTOR



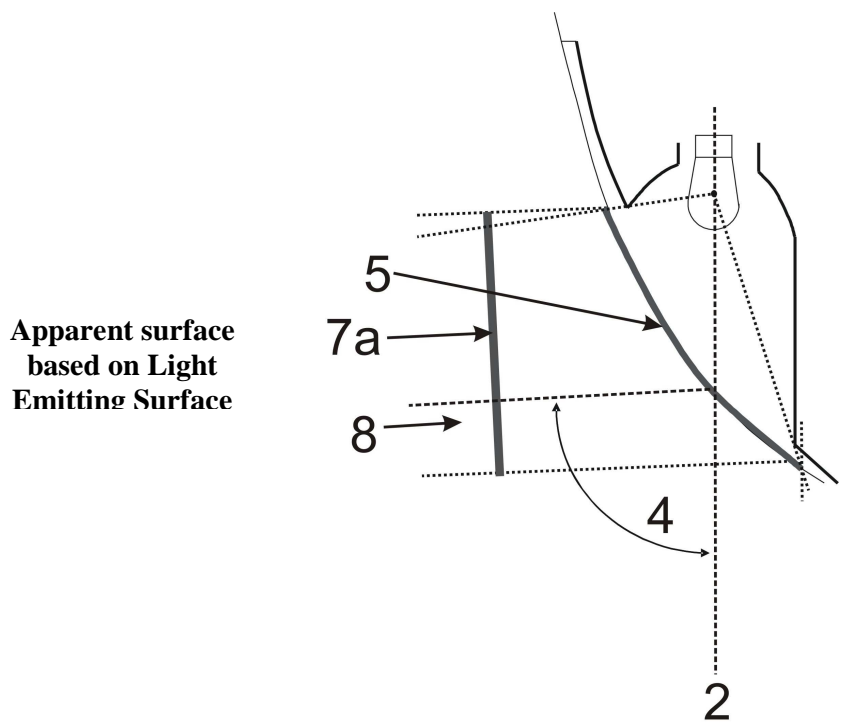
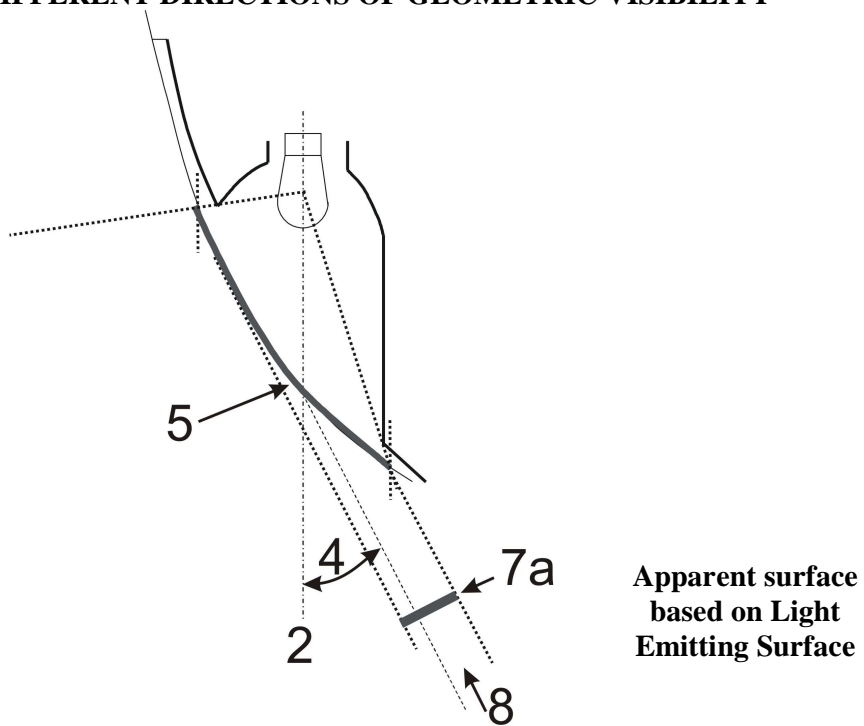
PART 2 - ILLUMINATING SURFACE OF A LIGHT-SIGNALLING DEVICE OTHER THAN A RETRO-REFLECTOR



PART 3 - EXAMPLES OF APPARENT SURFACE BASED ON ILLUMINATING SURFACE IN DIFFERENT DIRECTIONS OF GEOMETRIC VISIBILITY



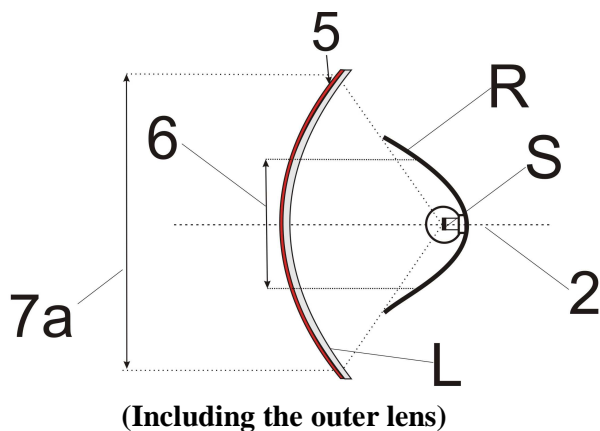
PART 4 - EXAMPLES OF APPARENT SURFACE BASED ON LIGHT EMITTING SURFACE IN DIFFERENT DIRECTIONS OF GEOMETRIC VISIBILITY



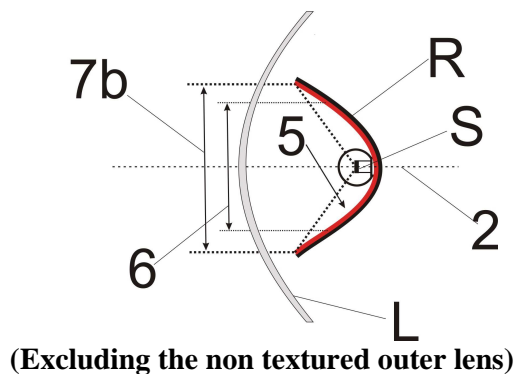
**PART 5 - EXAMPLE OF ILLUMINATING SURFACE IN COMPARISON WITH
LIGHT-EMITTING SURFACE IN THE CASE OF A "SINGLE FUNCTION LAMP"
(See paragraphs 2.8. to 2.9 of this Regulation)**

Examples of a light source with a reflector optic behind an outer lens:

Example 1:

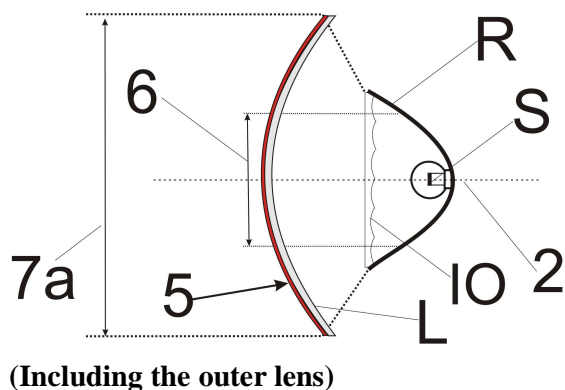


Example 2

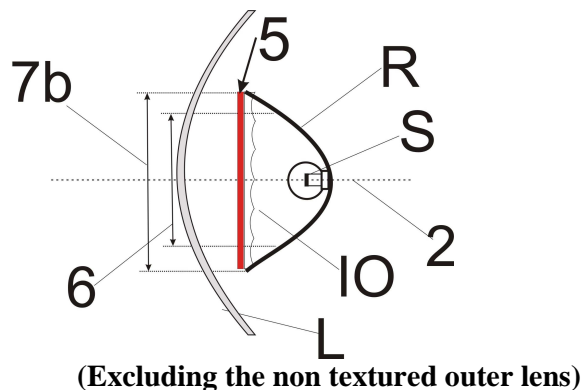


Examples of a light source with a reflector optic with a inner lens behind an outer lens:

Example 3:

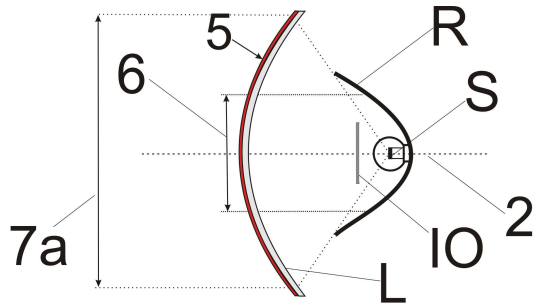


Example 4



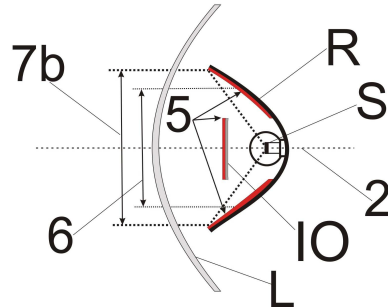
Examples of a light source with a reflector optic with a partial inner lens behind an outer lens:

Example 5:



(including the outer lens)

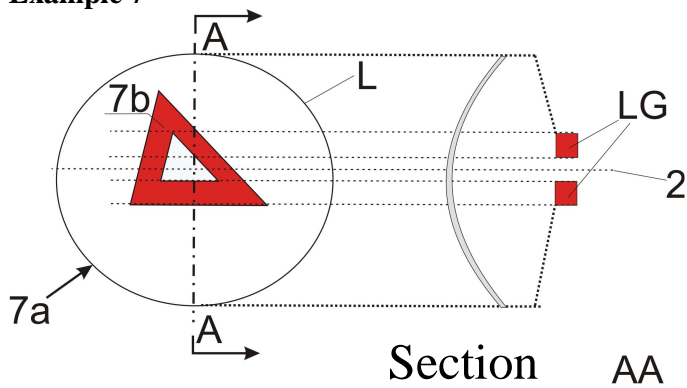
Example 6



(excluding the non textured outer lens)

Example of a light guide optic behind an outer lens:

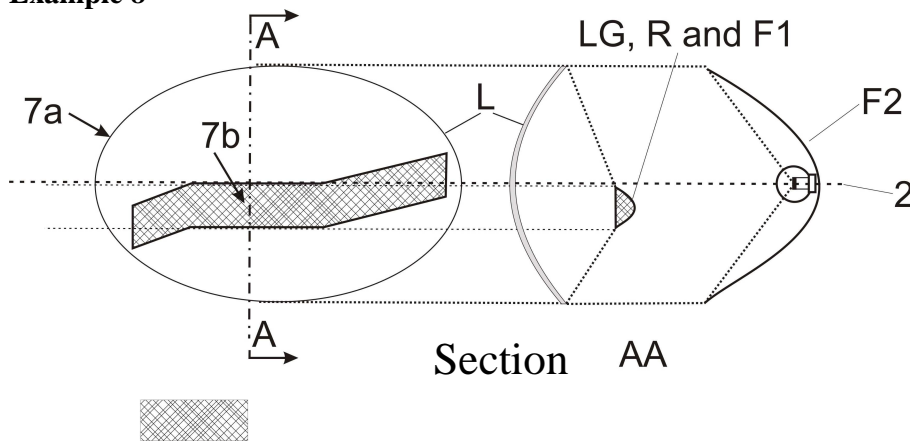
Example 7



In the case where the non textured outer lens is excluded, "7b" is the apparent surface according to paragraph 2.8. b.

Example of a light guide optic or a reflector optic behind an outer lens:

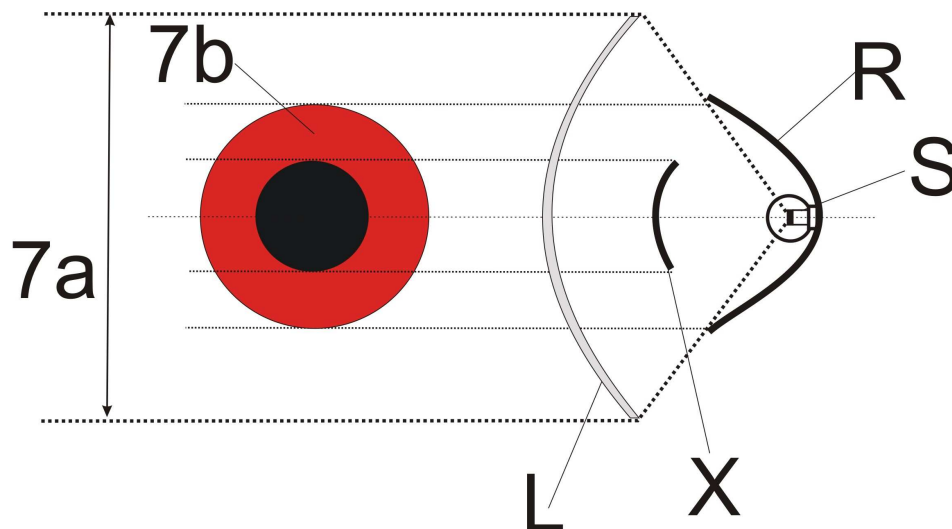
Example 8




In the case where the non textured outer lens is excluded, "7b" is the apparent surface according to paragraph 2.8. b, and F1 shall not transparent to F2

Example of a light source with a reflector optic in combination with an area which is not part of this function, behind an outer lens:

Example 9:

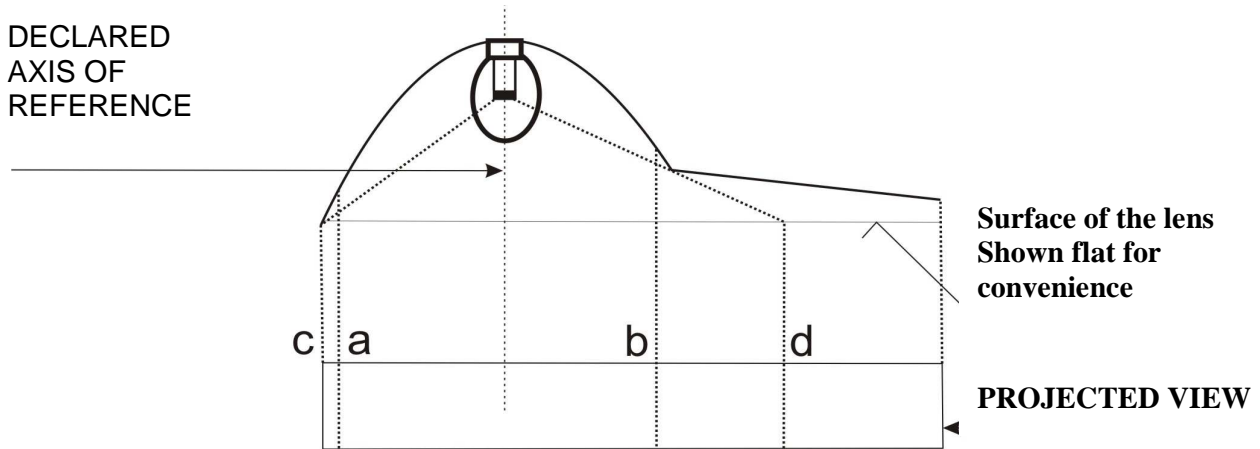


 In the case where the non textured outer lens is excluded, "7b" is the apparent surface according to paragraph 2.8. b.

PART 6 EXAMPLES SHOWING THE DETERMINATION OF THE LIGHT-EMITTING SURFACE IN COMPARISON WITH ILLUMINATING SURFACE
 (See paragraphs 2. 9. and 2. 8. of this Regulation)

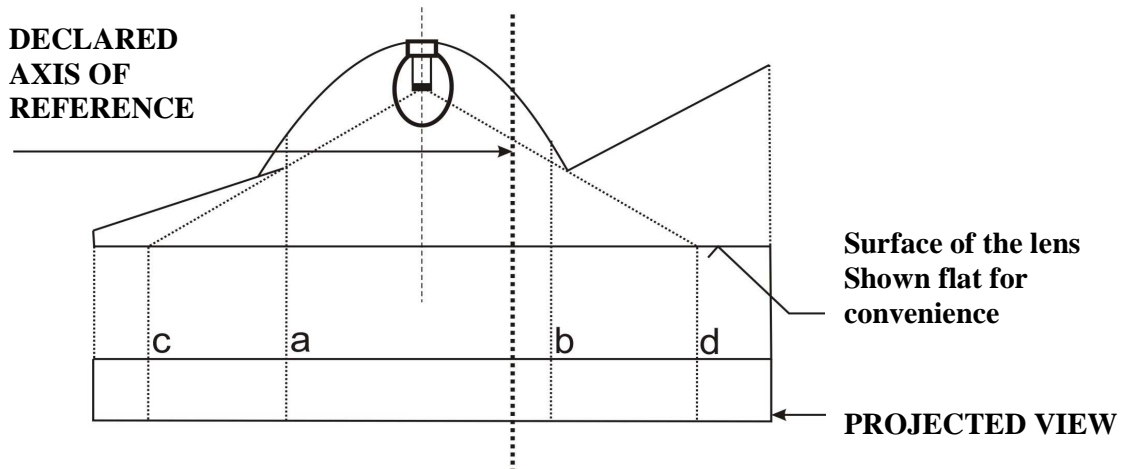
Note: Reflected light could / may contribute to the determination of the light emitting surface

Example A:



	Illuminating surface	Declared Light-emitting surface according to 2.8.a
Edges are	a and b	c and d

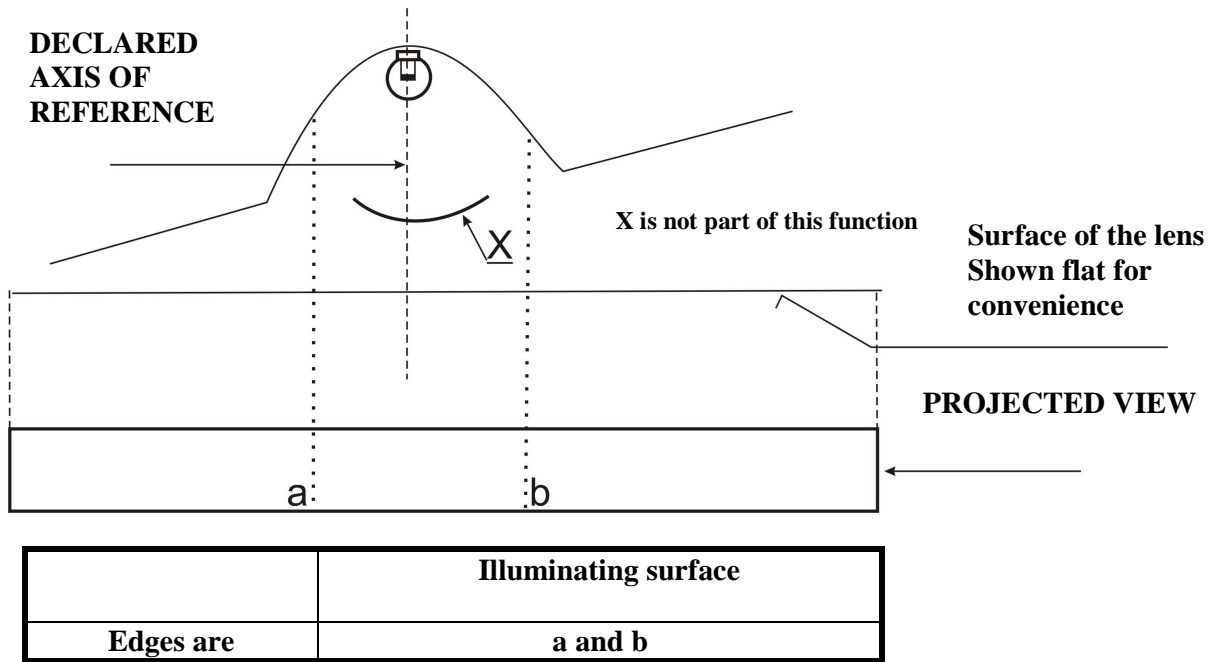
Example B:



	Illuminating surface	Declared Light-emitting surface according to 2.8.a
Edges are	a and b	c and d

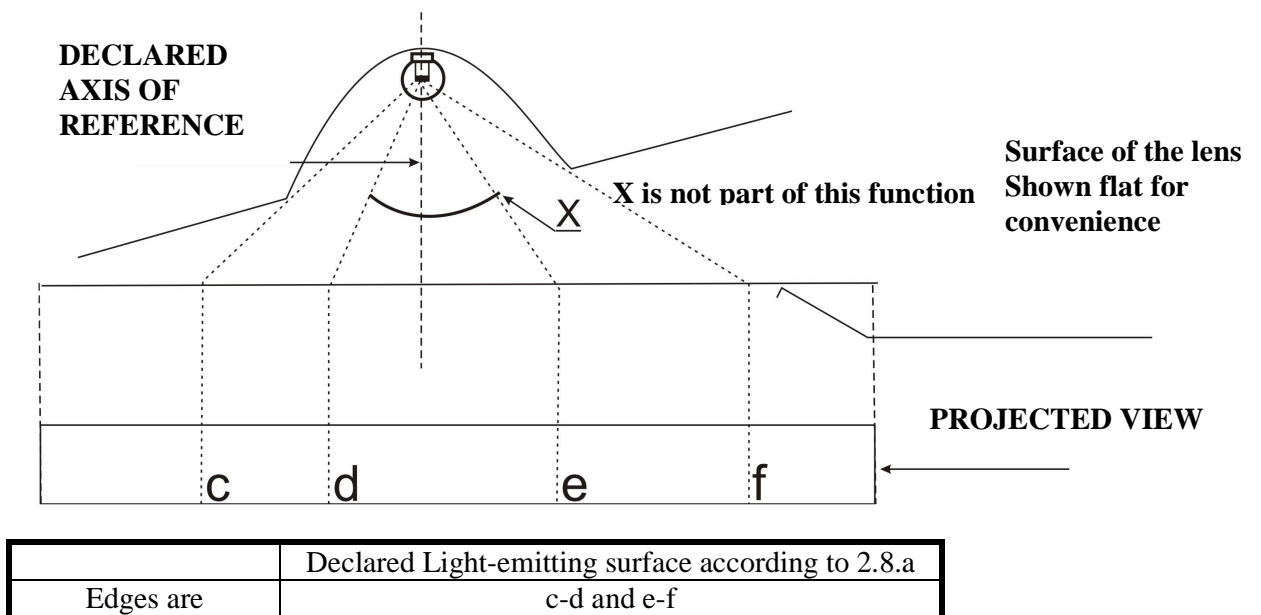
Example C:

Example to determine the illuminating surface in combination with an area which is not part of the function:



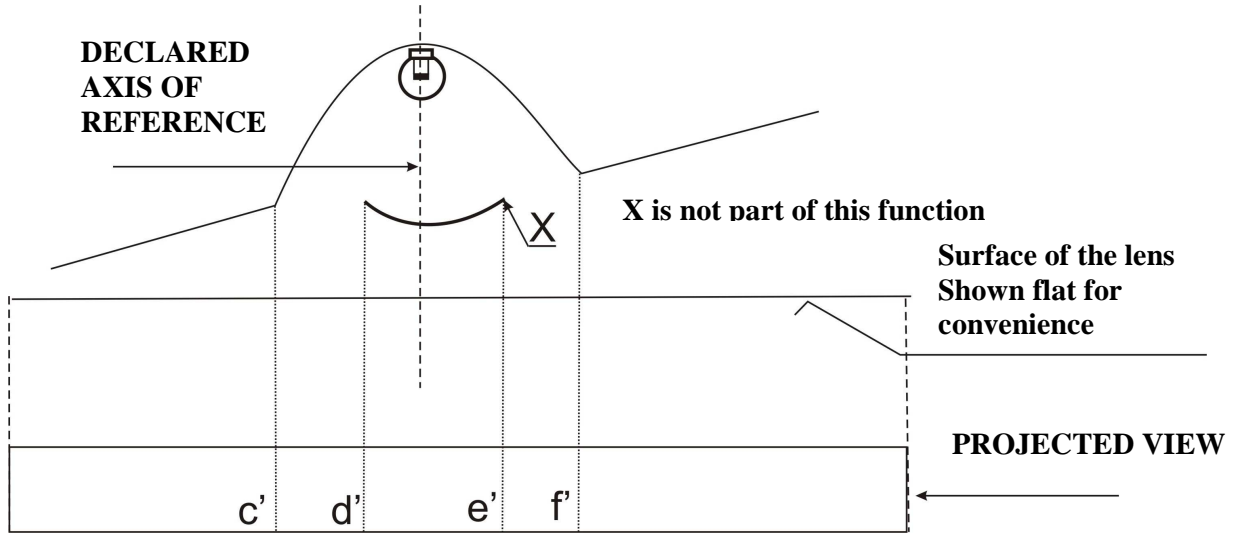
Example D:

Example to determine a light emitting surface according to 2.8.a in combination with an area which is not part of the function:



Example E:

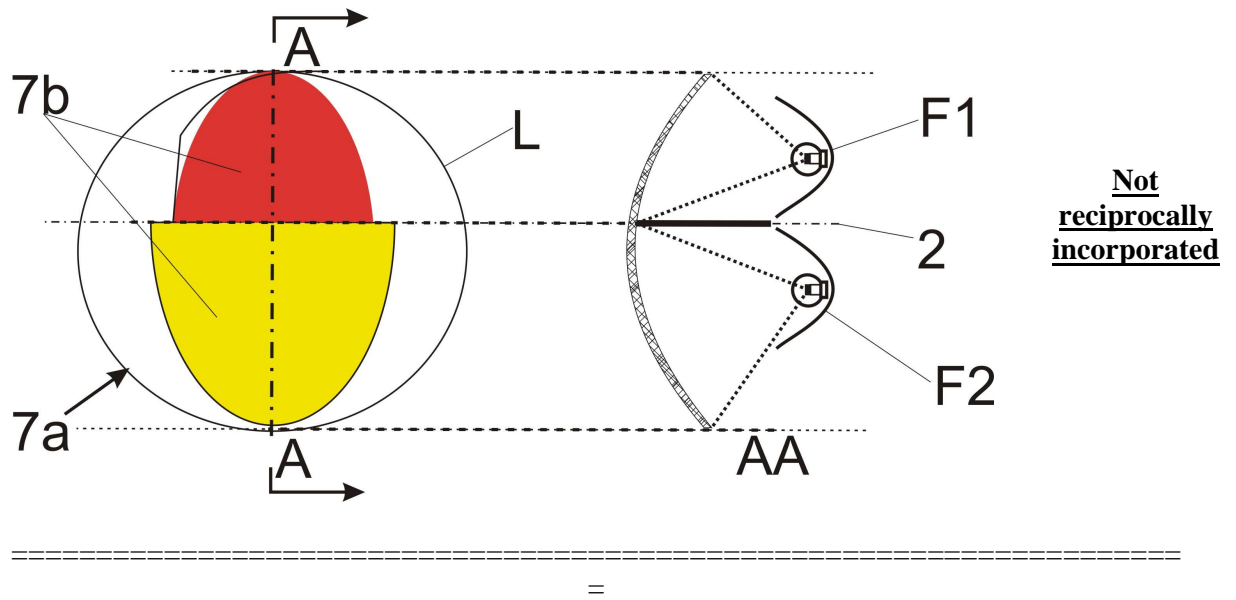
Example to determine the apparent surface in combination with an area which is not part of the function and a non textured outer lens (according to 2.8.b):



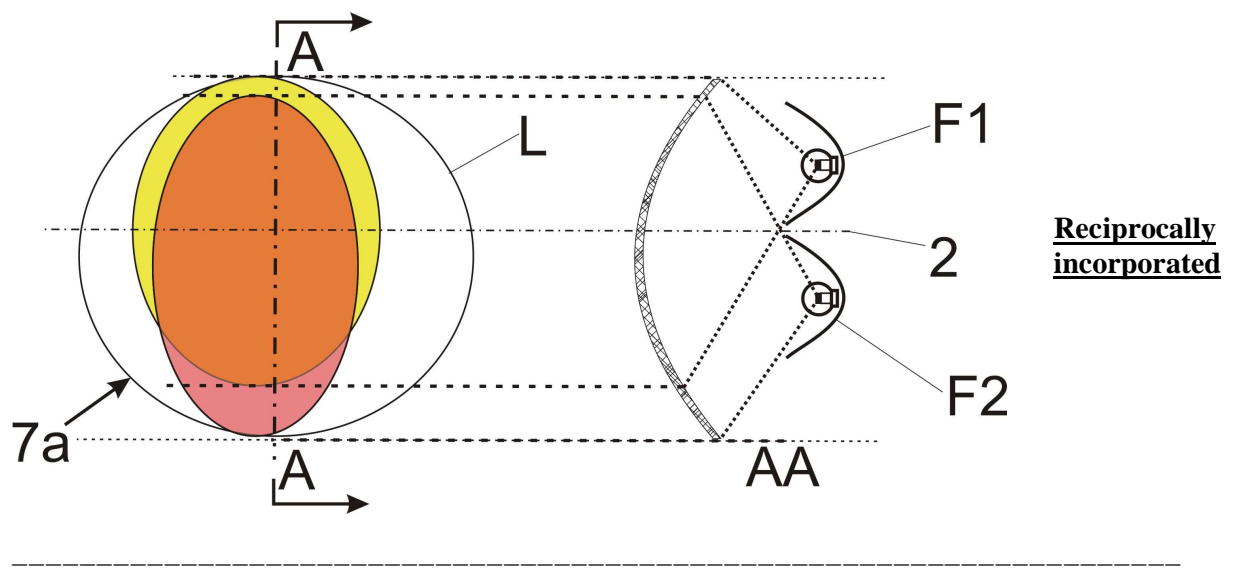
	Declared Light emitting surface according to 2.8b. For example
Edges are	c'-d' and e'-f'

**PART 7 EXAMPLES TO ENABLE A DECISION REGARDING THE
RECIPROCAL INCORPORATION OF TWO FUNCTIONS**

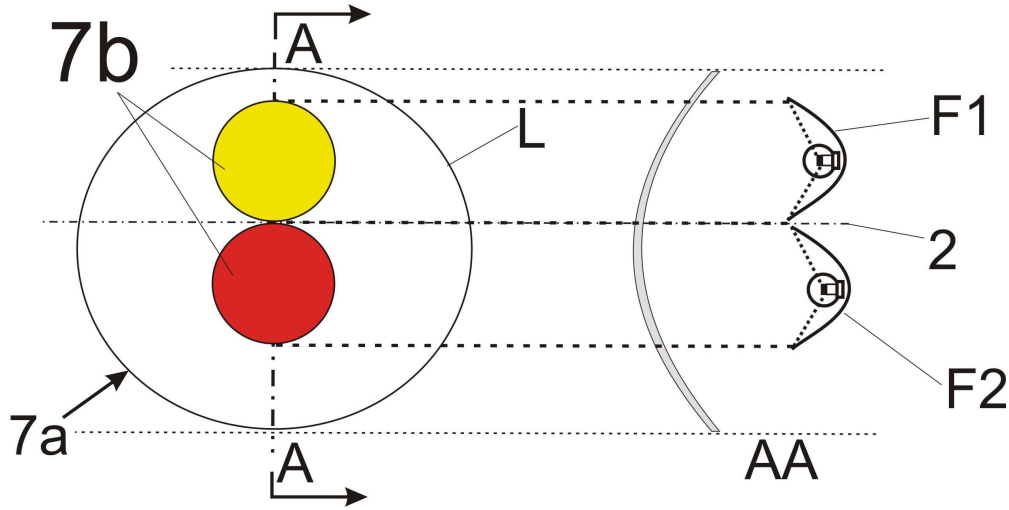
In the case with a textured outer lens and a wall in between:



In the case with a textured outer lens:

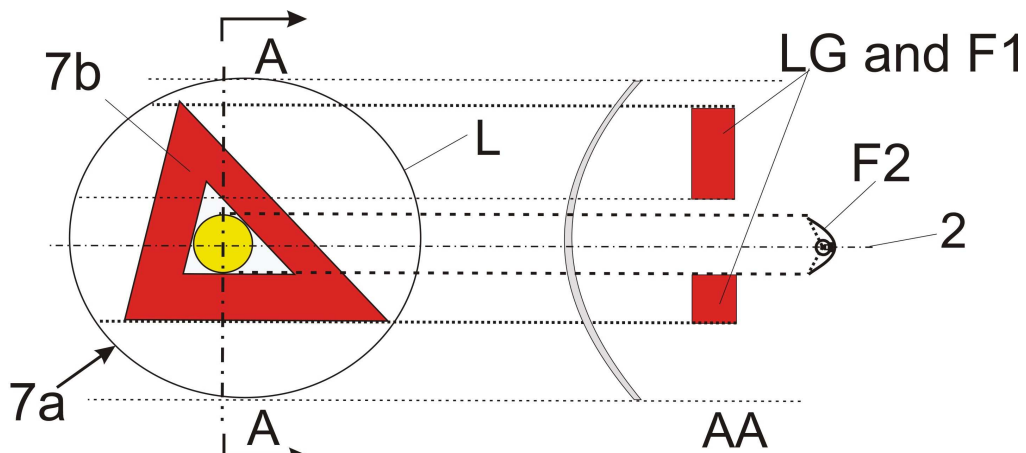


In the case where the non-textured outer lens is excluded:

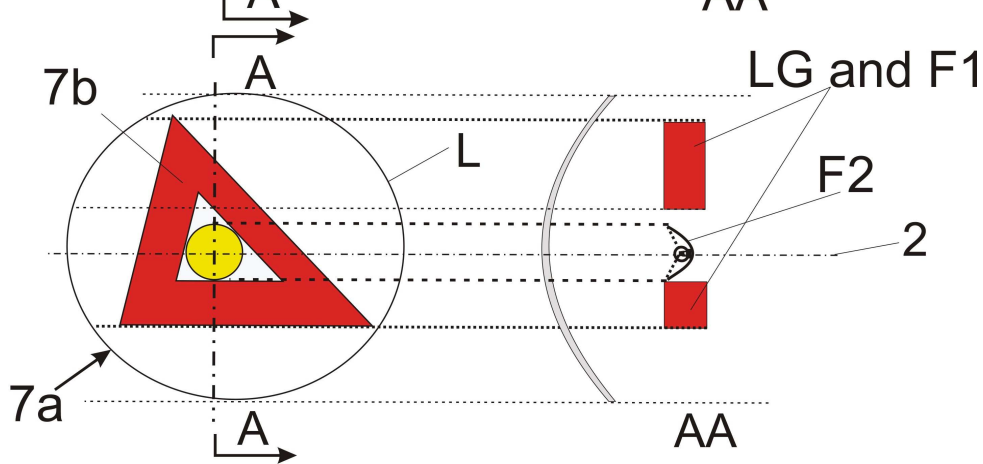


Not reciprocally incorporated

In the case where the non-textured outer lens is excluded:

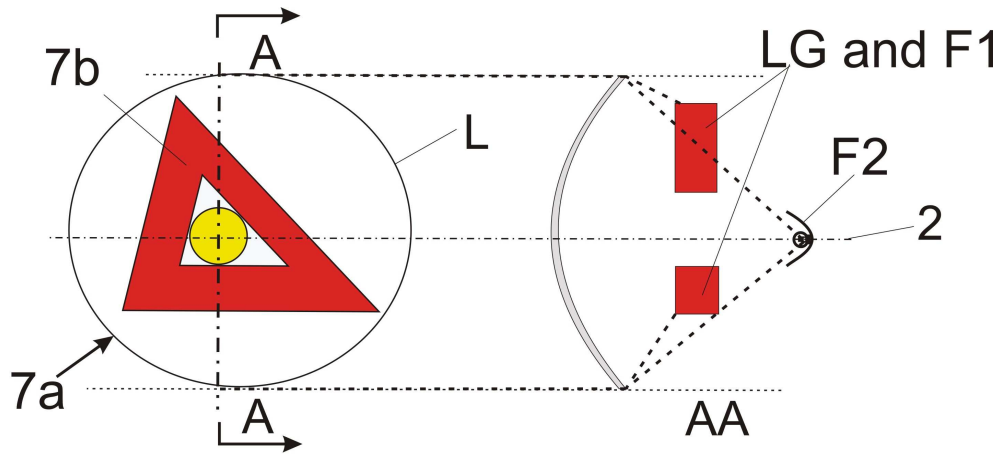


Not reciprocally incorporated

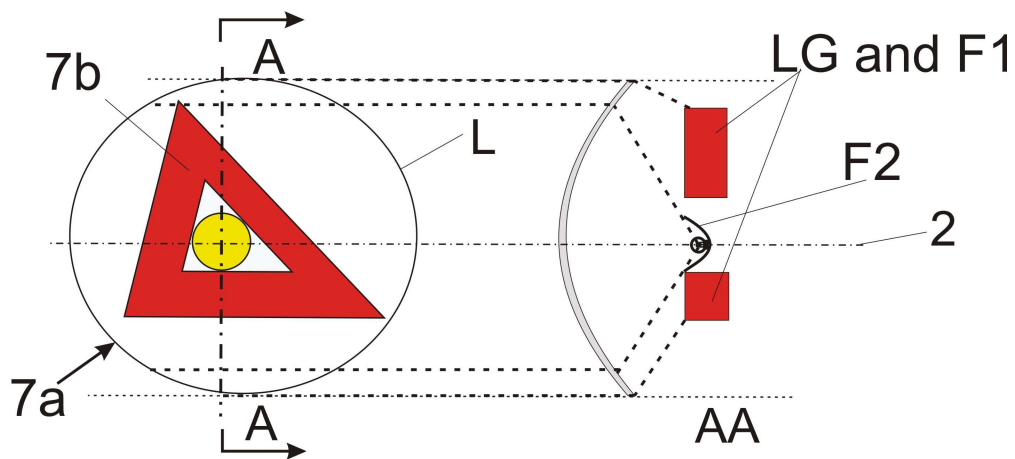


Not reciprocally incorporated

In the case where the outer lens (textured or not) is included:

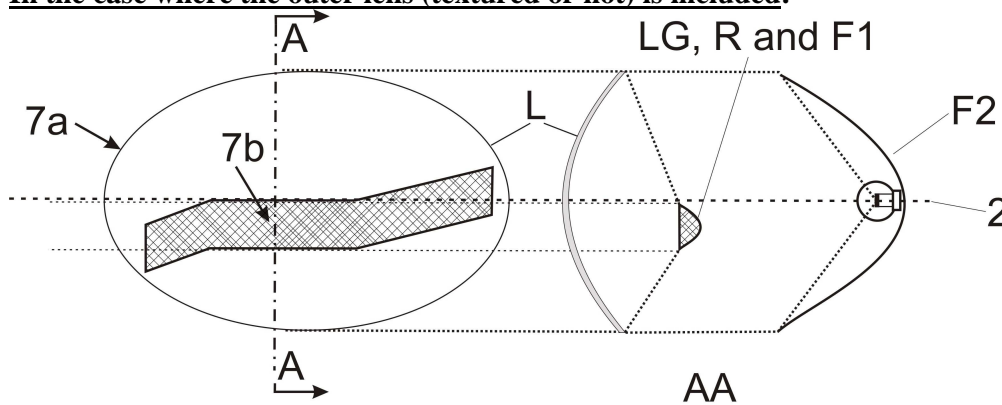


**Reciprocally
incorporated**



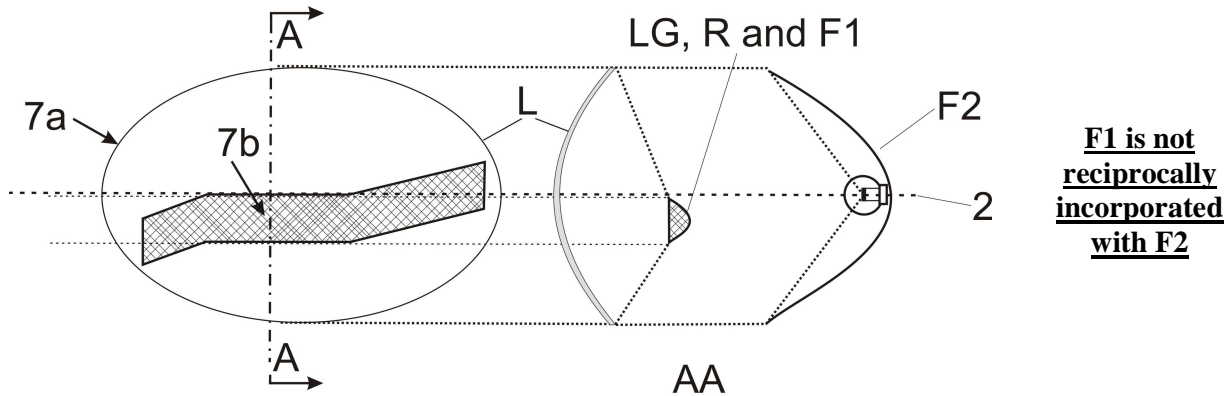
**Reciprocally
incorporated**

In the case where the outer lens (textured or not) is included:

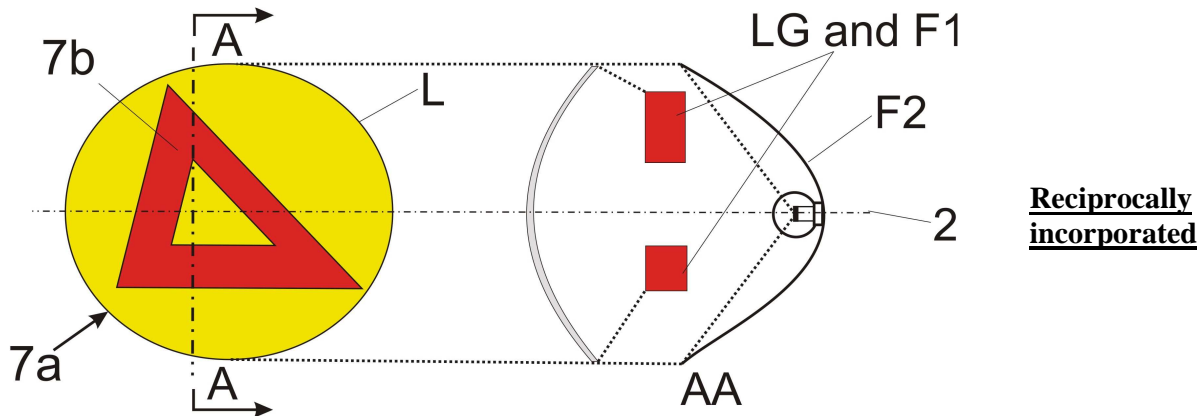


**Reciprocally
incorporated**

In the case where the non-textured outer lens is excluded, "7b" is the apparent surface according to paragraph 2.8 and F1 shall not be transparent to F2:



In the case where the non-textured outer lens is excluded or not:



B. JUSTIFICATION

The definition of apparent surface of a lighting device, light signalling device or reflex reflector in Regulation No. 48 has two specified options; "light emitting surface" or "illuminating surface", however, the application of these options is currently unclear.

This proposed amendment separates the definitions of "light emitting surface" and "illuminating surface" and includes additional examples in Annex 3 of the regulation for clarity. These examples take into account technical innovation and current design trends in lighting products that give rise to device construction resulting in irregular and complex shapes.

Further, a definition for "textured outer lens" is included along with examples which should be helpful to determine whether functions are "reciprocally incorporated" or "not reciprocally incorporated".
