

Recommendations for

Aiming of headlamps and auxiliary lamps on motor vehicles

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Foreword

These Recommendations have been prepared under the authority of the Automobile Industry Standards Committee of BSI.

Motor vehicle headlamps are optically precise devices for producing light in directions specific to each type of unit. When mounted on the vehicle, these directions must be orientated in relation to the horizontal plane passing through the headlamp centre and the longitudinal plane of symmetry of the vehicle so that the desired beam effect is achieved.

Vehicle headlamps are designed to produce either a long-range main beam for open road driving or a short range dipped beam. Aimed too high, the dipped beams will give increased range but will also dazzle. On the other hand, aimed too low these beams will not dazzle but will give inadequate range. Both conditions are equally dangerous and the correct result can only be achieved by correct alignment of the beams.

It is essential therefore, that headlamps are correctly mounted and orientated on the vehicle and maintained so that the beams are directed in the direction intended.

In practice the aim of headlamps is affected by the way in which the vehicle is loaded. These Recommendations describe the way in which headlamps should be set under specified conditions of loading.

NOTE Attention is drawn to the Road Vehicles Lighting Regulations which give legal requirements relating to the mounting and the use of headlamps and auxiliary lamps on motor vehicles.

The vehicle loading conditions and the aiming procedures given in Clauses 8 and 9 are considered to be those which will be most effective in obtaining uniform aiming of headlamps. Users of these recommendations are urged to write to BSI giving their experience in applying them in practice; in particular, constructive proposals for improvement will be welcomed.

Reference is made in this standard to various Regulations published by the Inland Transport Committee of the Economic Commission for Europe (ECE).

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been approved by the Automobile Industry Standards Committee, was published under the authority of the Executive Board of the Institution on 13 September 1971

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1 Scope

These Recommendations deal with the methods to be used for the aiming and checking of headlamps and auxiliary lamps on motor vehicles, including motorcycles and scooters, where the left-hand rule of the road is applicable.

The recommendations are intended for both the initial aiming and the subsequent checking of the aim of headlamps and auxiliary lamps. Information on the different types of headlamps in current use is given.

Except where otherwise stated, the recommendations apply equally to headlamps, fog lamps and supplementary main beam lamps.

2 Definitions

For the purposes of these Recommendations the following definitions apply:

main (driving or upper) beam

a beam of light intended primarily for distant illumination of the road when no other vehicle is approaching

dipped (meeting or lower) beam

a beam of light intended to illuminate the road ahead of the vehicle when meeting other road users

high intensity zone (hot spot)

the zone of highest intensity of a beam as it appears to an observer viewing the beam thrown upon a screen or other aiming surface

2-Headlamp system

two headlamps, mounted one on each side of the longitudinal plane of symmetry of the vehicle, each headlamp containing a filament or filaments providing the main and the dipped beams

NOTE Certain classes of vehicle are permitted to use a 2-headlamp system providing only dipped beams. Such headlamps are aimed according to the type of dipped beams fitted.

4-Headlamp system

four headlamps mounted in pairs, one pair on each side of the longitudinal plane of symmetry of the vehicle. In each pair, one headlamp contains a filament providing the main beam, and the other headlamp contains a filament providing the dipped beam and in certain types an additional main beam filament

mechanically aimed headlamp

a headlamp which is capable of being aimed optically or mechanically

aiming plane

a plane formed by three pads integrally mounted on the face of the lens of sealed beam headlamps. Such headlamps are pre-aimed during manufacture so that the aiming plane is accurately normal to the axis of the headlamp beam

auxiliary lamp

a lamp intended to supplement or under certain conditions of visibility, to replace the normal (obligatory) headlamps on a vehicle. The following types of auxiliary lamps are included in this standard:

- 1) *Fog lamp*. A lamp specifically employed to improve the illumination on the road in conditions of fog, snowfall, rain or dustclouds.
- 2) *Supplementary main beam (long range) lamp*. A lamp specifically employed to improve the distant illumination on the road when the main beam is in operation.

3 Types of headlamps

General information on the headlamps most commonly encountered in the United Kingdom is given in Table 1 and Figure 1 and Figure 2 to facilitate their recognition.

Table 1 — Types of headlamps commonly encountered in UK (see Figure 1 and Figure 2)

No.	Description	Headlamp system	Special identification embossed on lens	Beam to be used for aiming	Typical beam pattern
1	Sealed beam headlamp	2 lamps	none	main	Figure 2a
2		2 lamps	“2”	dipped	Figure 2b
3		4 lamps }	“1”	main	Figure 2a
4			“2”	dipped (see Note)	Figure 2c
5		2 lamps	none or “2”	dipped	Figure 2c
6	Headlamp with replaceable British prefocused filament lamp	2 lamps	none	main	Figure 2a
7		4 lamps }	none	main	Figure 2a
8			none	dipped (see Note).	Figure 2b
9	Asymmetric beam headlamp with replaceable prefocused filament lamp	2 lamps	none	dipped	Figure 2c
10		4 lamps }	none	main	Figure 2a
11			none	dipped (see Note)	Figure 2b
12	Headlamp with replaceable British prefocused tungsten/halogen filament lamp	2 lamps	none	main	Figure 2a
13	Asymmetric beam headlamp with replaceable prefocused filament lamp (filament lamp to ECE Regulation No. 20 ^a)	2 lamps	none	dipped	Figure 2c
14	Asymmetric beam headlamp with replaceable prefocused filament lamp	2 lamps	as shown in Figure 1	dipped	Figure 2c
15	(filament lamp to ECE Regulation No. 2 ^b)	4 lamps }		dipped (see Note)	Figure 2c
16				main	Figure 2a
17	Asymmetric beam headlamp with replaceable prefocused tungsten/halogen filament lamp	2 lamps		dipped	Figure 2c
18	(filament lamp to ECE Regulation No. 8 ^c)	4 lamps }		dipped (see Note)	Figure 2c
19				main	Figure 2a
20	Asymmetric sealed beam headlamp	2 lamps		dipped	Figure 2c
21		4 lamps }		dipped (see Note)	Figure 2c
22			main	Figure 2a	
23	Symmetric beam headlamp with replaceable prefocused filament lamp	2 lamps (or 1 on motor-cycle)	none	dipped/main (see 9.6)	Figure 2d

NOTE In all 4-headlamp systems the dipped beam should be aimed on the dipped beam filament even though it may in addition contain a main beam filament.

^a Regulation No. 20, "Headlamp emitting an asymmetrical passing or driving beam, or both with halogen (H₄) filament lamp".

^b Regulation No. 2, "Electric lamps for headlamps emitting an asymmetrical passing or driving beam, or both".

^c Regulation No. 8, "Headlamp emitting an asymmetrical passing or driving beam, or both, with halogen (H₁, H₂ or H₃) filament lamps".