

## Headlamps, Check and Adjust

Main headlamp housing or retainer displays reference 1.0 % for low beam adjustment according to EEC 76/756 or ECE-R48 guidelines.

76/756 EEC or ECE-R48 guidelines cover checking and adjustment of headlamps on vehicle. Correct adjustment of headlamps on vehicle should enable optimal road illumination by low beam, with minimal dazzling of oncoming traffic. To this end, inclination of headlamp beam to level road surface and angle of beam to vertical longitudinal plane running through vehicle's centre must satisfy conditions laid down in guidelines.

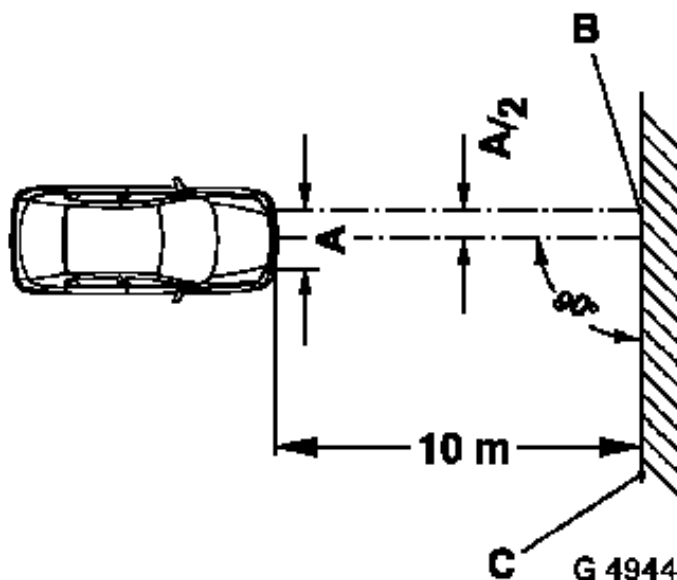
Dazzling (low beam) is considered eliminated if intensity of illumination at a distance of 25 m from each individual headlamp on the plane perpendicular to the road and at height of headlamp as well as beyond, is not greater than 1 lux. This requirement is generally satisfied if headlamp adjustment is carried out according to adjustment guidelines.

Reference 1.0 % corresponds to adjustment dimension of headlamp in reference to the inclination of the light beam. The inclination at 10 m distance from vehicle headlamp is therefore 10 cm (illustrations G 4944 and G 5000). The inclination of low beam headlamp is indicated by its light/dark border.

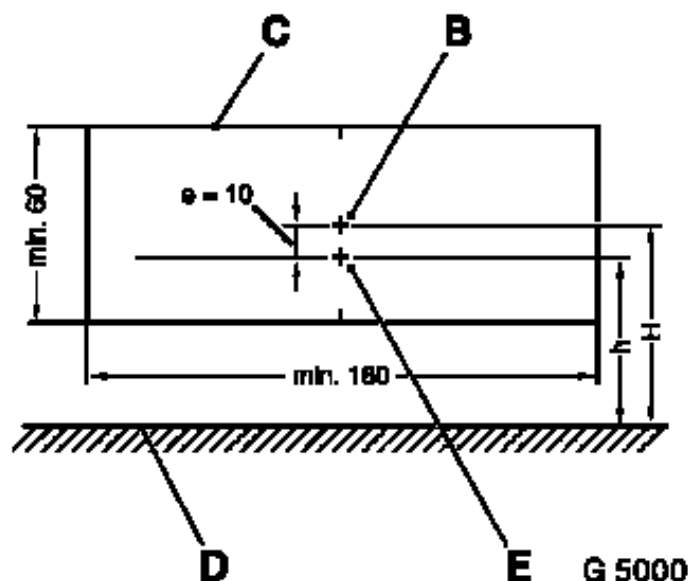
Adjustment guideline is clarified by illustrations G 4944 and G 5000.

Abbreviations used:

- A = Horizontal distance between headlamp centres
- B = Central marking
- C = Test surface



- D = Road surface
- E = Break point
- E = Adjustment dimension in cm,  $e = H - h$   
(adjustment dimension, main headlamps 1.0 %,  $e = 10$  cm, front fog lamps 2 %,  $e = 20$  cm)
- H = Height of centre of headlamp over road surface
- H = Height of low beam light/dark borderline above ground level



Headlamp adjustment is carried out according to regulations, as shown in illustrations D 6213 and D 6214, using an adjuster. When using headlamp adjuster, ensure that vehicle road surface and surface for setting up adjuster are level and parallel to one another.

Vehicle tyres must have specified air pressure. Defective headlamp lenses and mirrors as well as blackened bulbs must be replaced before adjusting.

Adjustment is carried out at vehicle curb weight plus one person or 75 kg on driver's seat. (Curb weight = weight of operation-ready vehicle with completely filled fuel tank as well as weight of all equipment carried during operation, e.g. spare wheel, tools, jack, first aid kit, emergency warning triangle, etc.).

Vehicles with manual level control must be adjusted to the specified basic pressure (0.8 bar at curb weight).

Switch for headlamp range control to "0" position (position for headlamp basic adjustment).

The intersection between the horizontal and the ascending parts of the light/dark border (break point) must lie on the perpendicular through the central marking.

For easier determination of the intersection point, headlamp halves can be alternately covered and uncovered.

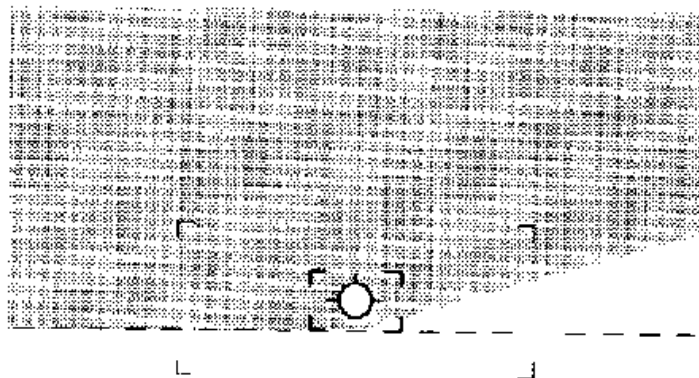
The headlamp adjuster used must correspond to existing guidelines, and manufacturer's operating instructions must be followed.

The headlamp adjuster must be regularly checked by manufacturer's maintenance service.

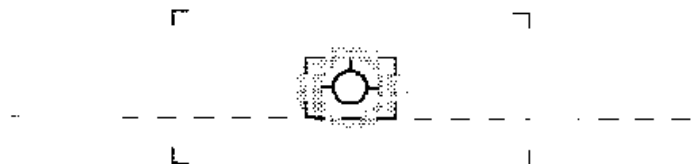
The headlamp adjuster is set up according to manufacturer's guidelines and is adjusted to 1.0 % inclination for the low beam or 2 % inclination for the fog lamp.

According to the 76/756 EEC guideline, the 15° line no longer applies to the low beam on the measurement screen (illustration D 6213 shows adjustment for right-hand traffic). The adjustment regulations can also be met using

headlamp adjusters which still have the 15° line on the measuring screen.

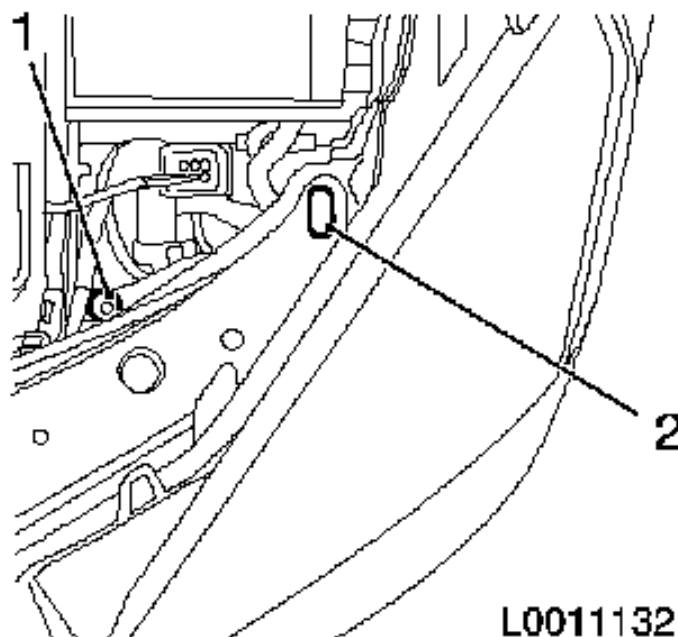
**D 6213**

For headlamps with joint adjustment for low beam and high beam, the light beam centre of the high beam must lie within the corner limits surrounding the central marking (illustration D 6214).

**D 6214****Adjust**

Headlamp:

- 1 Bolt for lateral adjustment
- 2 Bolt for vertical adjustment



Headlamps must be adjusted using a legally specified projection wall or with optical headlamp adjuster.

**Vertical adjustment** The light/dark borderline left of the adjustment cross must run horizontally along the adjustment line.

**Lateral adjustment** The light-dark border must run horizontally from the left side up to the adjusting cross and from there on at an angle of up to approximately  $15^\circ$  towards the upper right. The beam inclination is 1.0 % on 10 m.

**Important:** Carry out vertical adjustment first, then lateral adjustment. Check vertical adjustment again after lateral adjustment.