

Statutory Regulations

For Cars And Trailers

Pursuant To ECE Ruling 48



**Ideas today for
the cars of tomorrow**



Total overview of lighting regulations

Statutory provisions need to be taken into account if a vehicle is to be correctly equipped or retrofitted with parts. On the following pages, we would like to present the statutory regulations in accordance to ECE regulation 48 for the assembly of front, side and rear lights.

The overview is split into two areas:

- Regulations for vehicle classes (passenger cars, offroad vehicles, campers, buses, trucks, communal and special attachments).
- Regulations for vehicle classes (12 V trailers, caravans and 24 V trailers).

It is clearly stated which lamps are prescribed by law and which are approved. The attachment regulations for the individual lamps are explained in detail. The color markings and the Quick Finder on the side help you to find the regulations you need quickly and easily.

Experience has shown that statutory regulations frequently change. Therefore we can assume no liability for these equipment regulations.

Car classes:

M₁	Cars up to 3.5 t and up to 9 passengers
M₂	Cars up to 5 t and up to 9 passengers
M₃	Cars up to 5 t and over 9 passengers
N₁	Vehicles for transporting freight up to 3.5 t
N₂	Vehicles for transporting freight over 3.5 t up to 12 t
N₃	Vehicles for transporting freight over 12 t
N_{3G}	Offroad vehicles

Vehicle classes:

O₁	Trailers up to 0.75 t
O₂	Trailers over 0.75 t to 3.5 t
O₃	Trailers over 3.5 t to 10 t
O₄	Trailers over 10 t



Passenger cars



12 V trailers



Offroad vehicles



Caravans



Motorhome



24 V trailers



Buses



Trucks



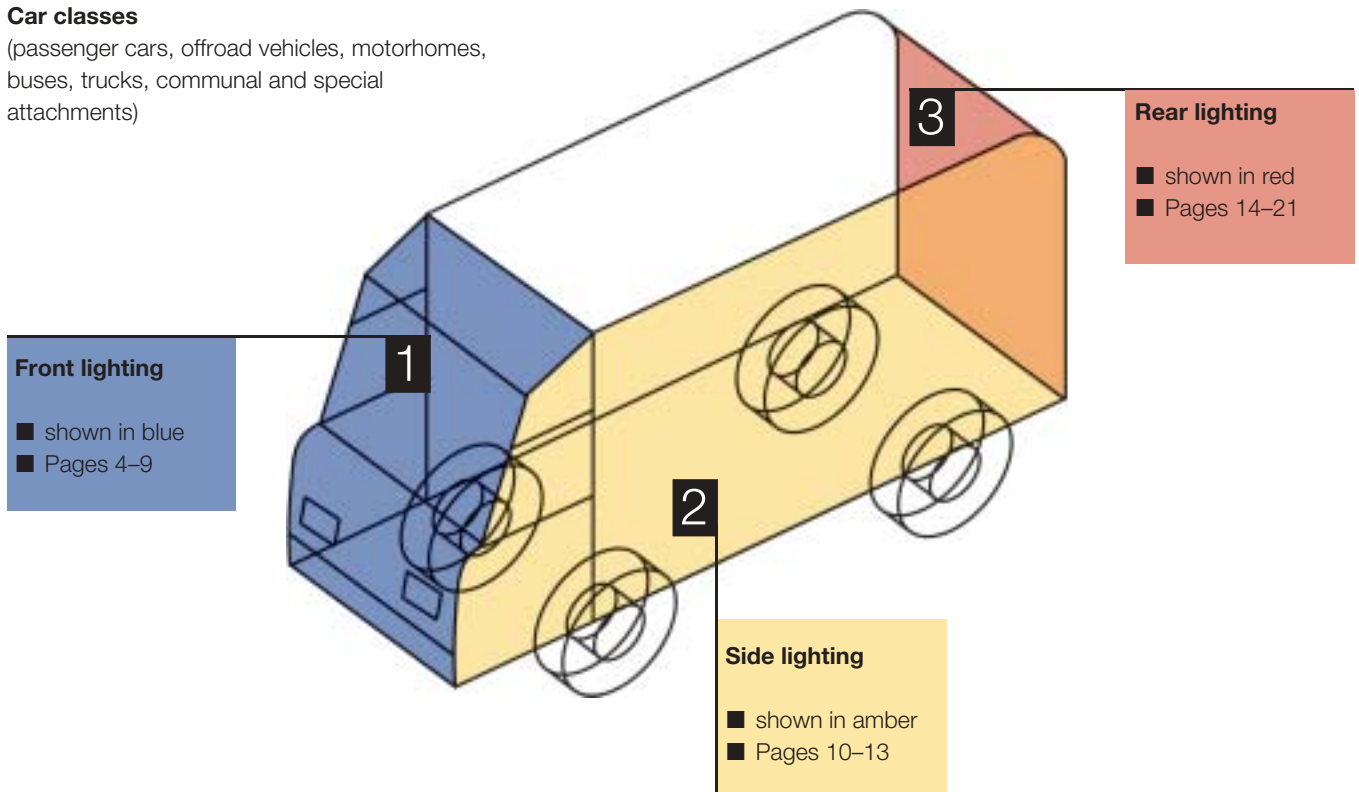
Municipal and other special vehicles

These pictograms indicate to which classes the provision applies.



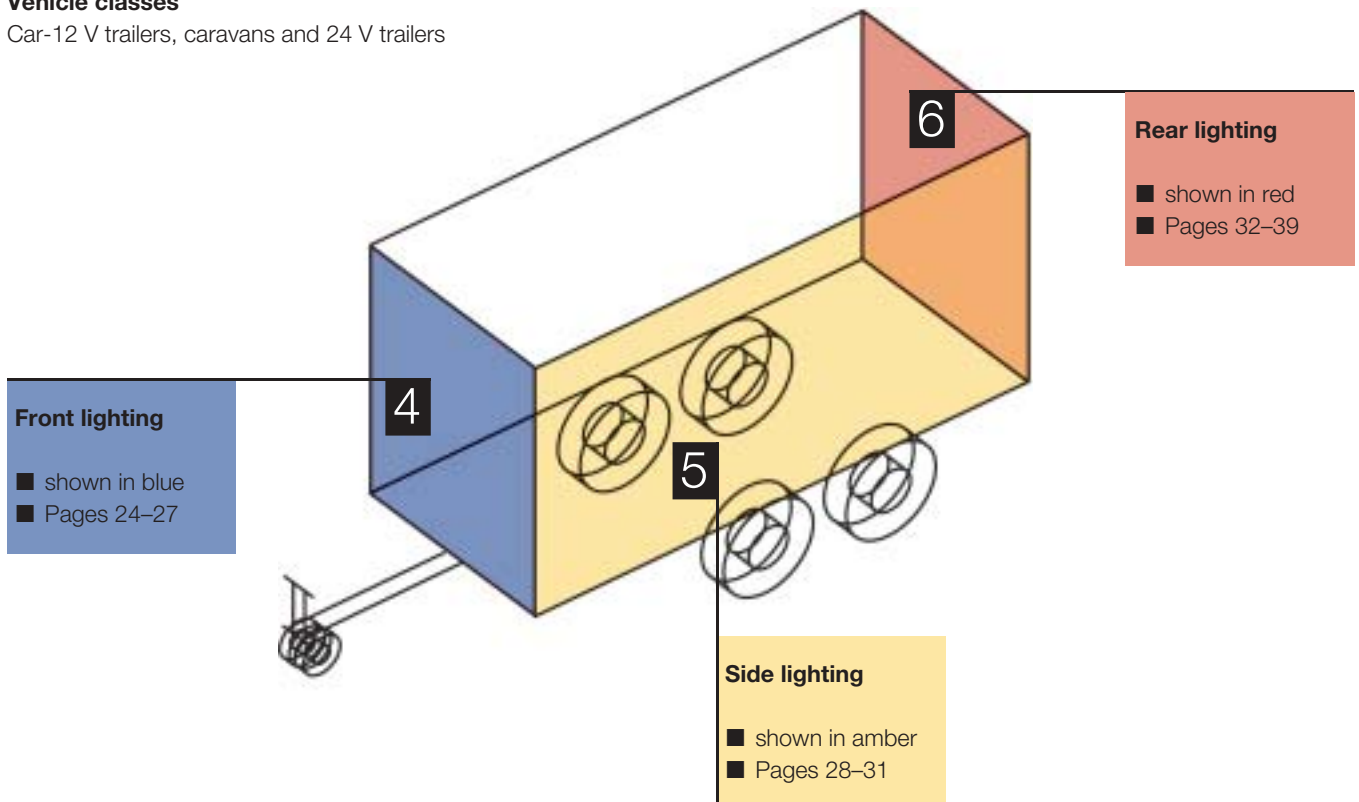
Car classes

(passenger cars, offroad vehicles, motorhomes, buses, trucks, communal and special attachments)



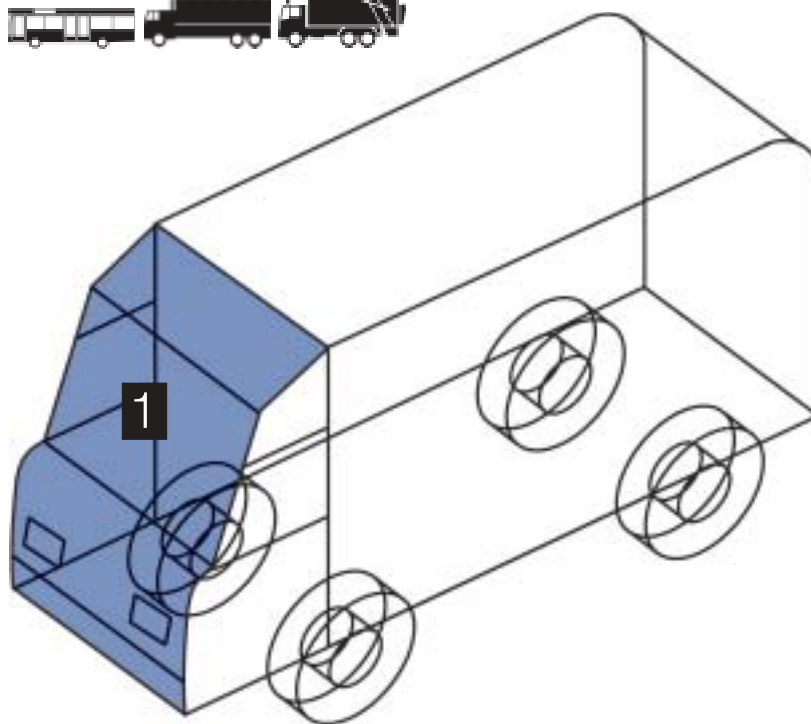
Vehicle classes

Car-12 V trailers, caravans and 24 V trailers



Statutory regulations pursuant to ECE ruling 48

Front lighting



Legal regulations for lights and headlamps

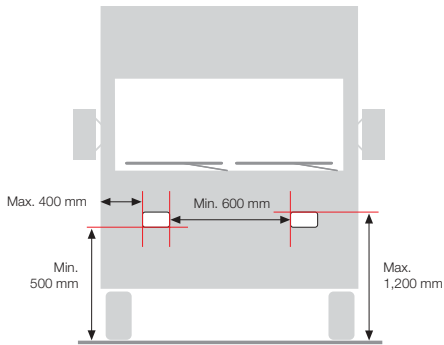
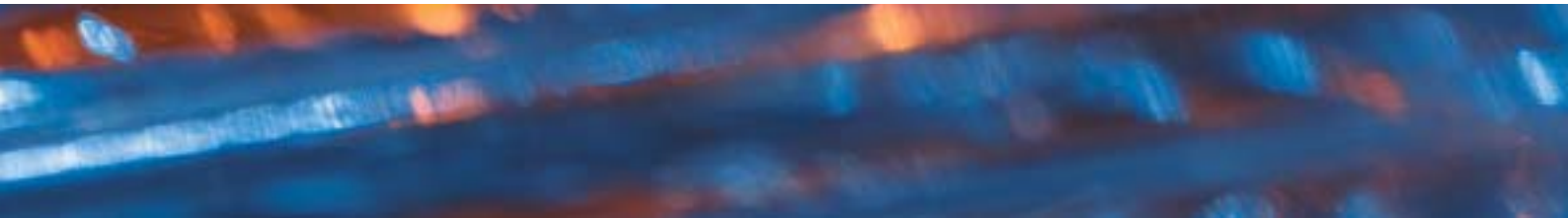
Due to the scope of the statutory regulations, only the most important are explained here. The following regulations contain all relevant aspects about signal lights, their properties and uses.

- **ECE-R 3**
Reflector
- **ECE-R 4**
Licence plate light
- **ECE-R 6**
Direction indicator front, rear and side
- **ECE-R 7**
Sidelight, taillight, stoplight and contour lights
- **ECE-R 19**
Fog light
- **ECE-R 23**
Reversing spotlight
- **ECE-R 38**
Rear fog lights

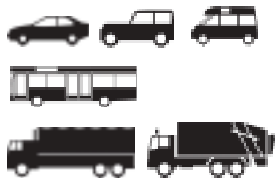
- **ECE-R 48**
For attachment and use
- **ECE-R 77**
Parking lights, front and rear
- **ECE-R 87**
Daytime running lights
- **ECE-R 91**
Side marker lights
- **ECE-R 98**
Xenon headlamp
- **ECE-R 104**
Contour markings
- **ECE-R 112**
Halogen headlamp
- **ECE-R 119**
Indicator
- **ECER 123**
Adaptive Frontlighting Systems (AFS)

Passenger cars, offroad vehicles, motorhomes, buses, trucks, communal and special attachments

Car classes	M₁	Cars up to 3.5 t and up to 9 passengers
	M₂	Cars up to 5 t and up to 9 passengers
	M₃	Cars up to 5 t and over 9 passengers
	N₁	Vehicles for transporting freight up to 3.5 t
	N₂	Vehicles for transporting freight over 3.5 t up to 12 t
	N₃	Vehicles for transporting freight over 12 t
	N_{3G}	Offroad vehicles

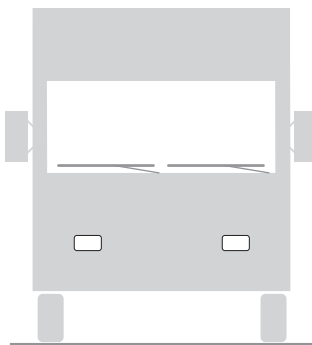


Applies for:

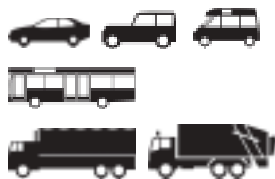


Low beam headlamps

Attachment:	Prescribed for all passenger car classes.
Number:	2 units
Attachment height:	Min. 500 mm, max. 1,200 mm
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. Min. 600 mm between the two low-beam headlamps. Does not apply to M ₁ vehicles and N ₁ vehicles. For all other vehicle classes min. 400 mm, if the total vehicle width < 1,300 mm.
Electrical switching:	Additional low-beam / high-beam headlamps that are switched in pairs are allowed. During the transition to low-beam, all high-beam lights must be switched off.
Closed circuit tell-tale:	Approved
Other regulations:	No cover or grille may be mounted in front of the headlamps. Only if special approval has been received. If the headlamps are equipped with light sources > 2,000 lumen (usually xenon) (high and low-beam), an automatic control unit for beamsetting and a headlamp cleaning system need to be installed. These requirements also apply for subsequent retrofitting of vehicles already in use that were converted after 01.04.2000. According to ECE R 98 or 112, only the low-beam headlamps may realise the cornering light function. 2 additional cornering lights are allowed.

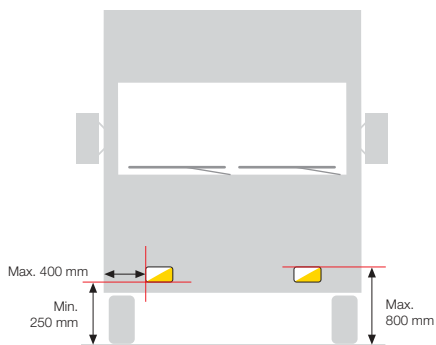


Applies for:



Headlamps for high-beam

Attachment:	Prescribed for all passenger car classes
Number:	2 or 4 units, for N ₃ vehicles = 6 units
Attachment height:	No special regulations
Attachment width:	No special regulations, but attached so that the drivers is not dazzled by reflections.
Electrical switching:	The high-beam headlamps may only be switched on either at the same time or in pairs. If 2 additional high-beam headlamps are attached, then no more than two pairs may shine at the same time. During the transition from low-beam to high-beam, at least 1 pair needs to be switched on for high-beam. During the low-beam function, all high-beam lights need to extinguish at the same time.
Closed circuit tell-tale:	Prescribed
Other regulations:	The light strength of all high-beam headlamps that can be switched on may not exceed 300,000 Candela. The sum of the reference figures may not be greater than 100.



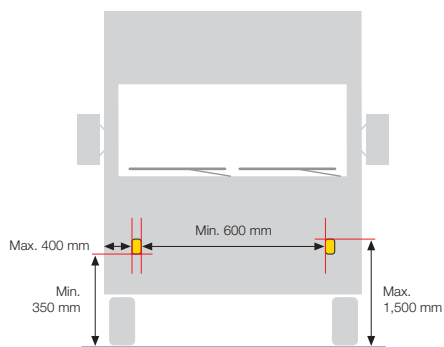
Applies for:



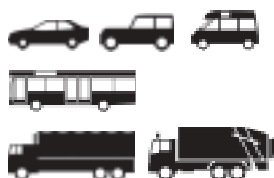
Fog lights

Attachment:	Approved for all passenger car classes. Prohibited on trailers.
Number:	2 units
Colour:	White or light amber
Attachment height:	Not higher than the low-beam headlamps, min. 250 mm above the ground. For M ₁ vehicles and N ₁ vehicles, max. 800 mm above the ground. For all other vehicle classes max. 1,200 mm, only for N _{3G} up to 1,500 mm allowed.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width.
Electrical switching:	They must be switched independent of the high or low-beam lights.
Closed circuit tell-tale:	Prescribed. An independent non-flashing warning light.
Other regulations:	Special regulation in connection with the headlamps of the R123 (AFS)

Front direction indicator (indicator)



Applies for:



Attachment:	Prescribed for all passenger car classes. Category 1, 1a or 1b.
Number:	2 units
Colour:	Amber
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm)
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. Min. 600 mm between the two indicators, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 45° inside to 80° outside, vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards.
Electrical switching:	It must shine independent of the other lamps. They need to be switched on and off on the same side of the vehicle by the same activation device. They must flash synchronously.
Closed circuit tell-tale:	Prescribed
Other regulations:	A malfunction of the direction indicators must be signalled in the vehicle.

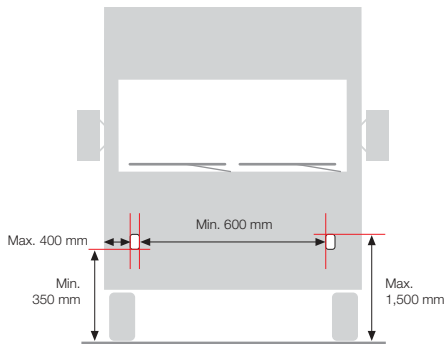
Note:

Category 1 = Clearance to the low-beam light / fog light > 40 mm
Light strength min. 175 cd

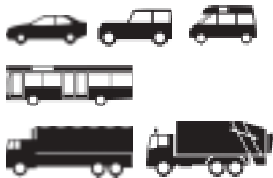
Category 1 = Clearance to the low-beam light / fog light > 20 mm and < 40 mm light strength min. 250 cd

Category 1b = Clearance to the low-beam light / fog light < 20 mm
Light strength min. 400 cd

cd = Candela

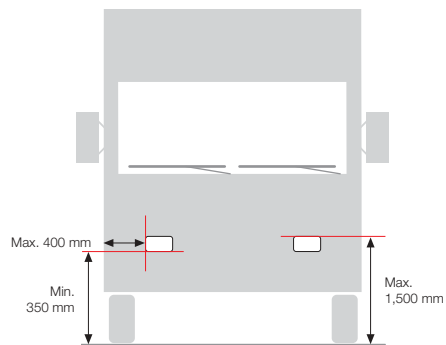


Applies for:



Sidelight

Attachment:	Prescribed for all passenger car classes
Number:	2 units
Colour:	White
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm)
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. The clearance between the sidelights for M1 vehicles and N1 vehicles is not defined. For all other vehicle classes min. 600 mm between both sidelights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 45° inside to 80° outside, vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards. Restriction for M1 and N1 vehicles possible. See ECE R48.
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Prescribed. The control lamp may not flash. Not necessary if the lighting equipment in the dashboard can only be switched on at the same time as the side-lights.

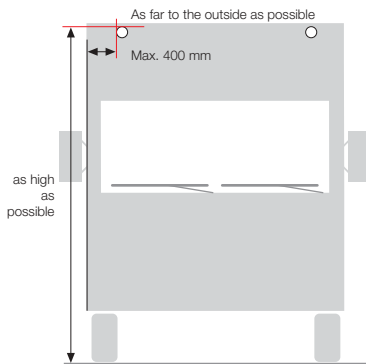


Applies for:



Parking lights, front

Attachment:	Approved for vehicles ≤ 6 m length and ≤ 2 m wide. Prohibited for all other vehicles.
Number:	2 lights at the front and 2 lights at the back or 1 light on each side.
Colour:	White
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm)
Attachment width:	No specific regulations for M1 vehicles and N1 vehicles. For all other vehicle classes: Min. 350 mm, max. 1,500 mm (exception: 2,100 mm).
Geom. field of vision:	Max. 400 mm from the most outside point of the vehicle width. If only two lights are attached, then attach to the vehicle sides.
Electrical switching:	The parking lights also need to work even if no other lights are switched on.
Closed circuit tell-tale:	Approved. If there is a control unit, it may not be confused with the control unit for the sidelights and taillights.
Other regulations:	Usually, the function of the parking lights is assumed by the taillights and sidelights.

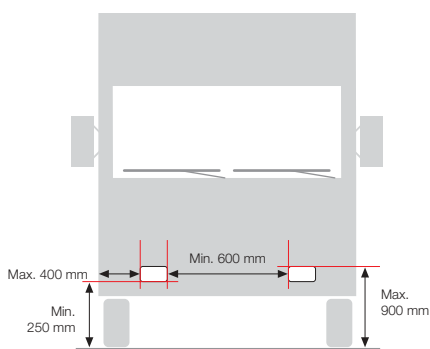


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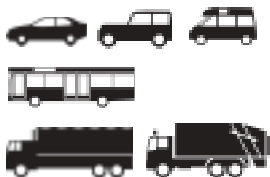


Front contour light

Attachment:	Prescribed for vehicles > 2.1 m wide Approved for vehicles > 1.8 m length and ≤ 2.1 m wide.
Number:	2 units
Colour:	White
Attachment height:	Above the transparent part of the windscreen.
Attachment width:	As far outside as possible, max. 400 mm from the most outside point of the vehicle width.
Geom. field of vision:	Horizontal 80° outside. Vertical 5° over and 20° below the horizontal line.
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The front white and rear red contour lights may be combined in one light unit as long as the installation instructions and angle of vision ranges are satisfied. Every sidelight or every sidelight reflector can be used. Additional reflection parts are allowed. Fitting of 2 additional contour lights allowed. Attachment height and width as described above!

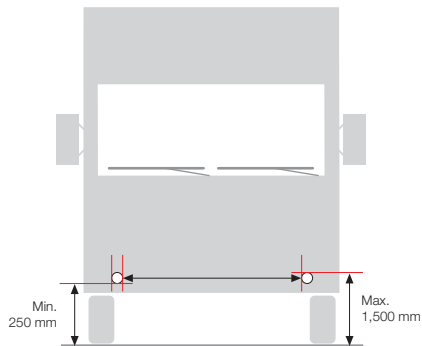


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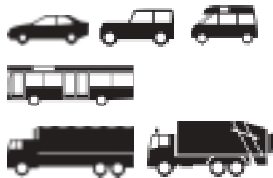


Front reflector

Attachment:	Prescribed for vehicles with retractable headlamps / lights Approved on all other vehicles.
Number:	2 units
Colour:	White
Form:	Not triangular
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm).
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. The clearance between the reflectors for M ₁ vehicles and N ₁ vehicles is not defined. For all other vehicle classes min. 600 mm between the two reflectors, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal ± 30° Vertical ± 10°, however for an attachment height of < 750 mm 5° downwards

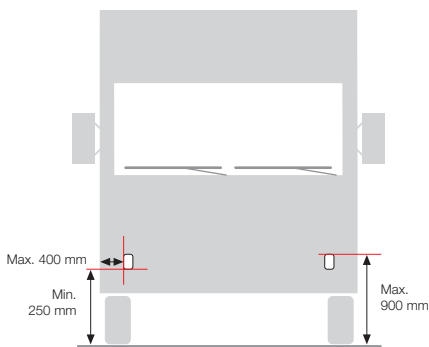


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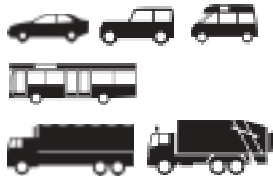


Daytime running lights

Attachment:	Prescribed for all passenger car classes. Prohibited on trailers.
Number:	2 units
Colour:	White
Attachment height:	Min. 250 mm, max. 1,500 mm.
Attachment width:	Min. 600 mm between the two daytime running lights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal $\pm 20^\circ$. Vertical $\pm 10^\circ$.
Electrical switching:	Automatic activation when the engine is started. The daytime running lights must switch off automatically, if the headlamps or fog lamps are switched on.
Closed circuit tell-tale:	Prescribed



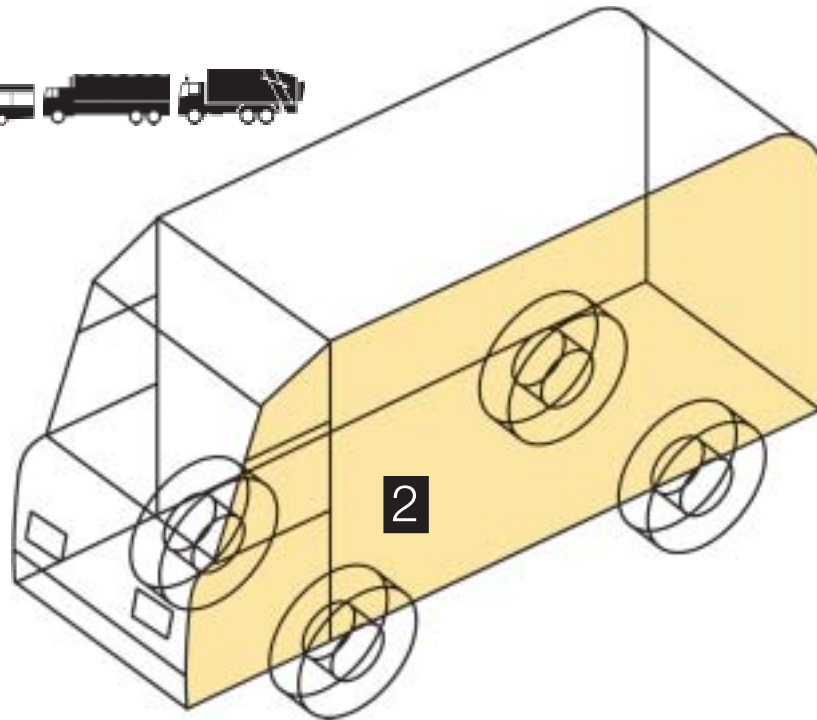
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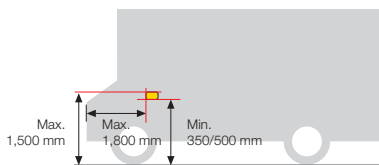
Bend light

Attachment:	Approved for all passenger car classes
Number:	2 units or 1 lamp on each side
Colour:	White
Attachment height:	Min. 250 mm, max. 900 mm, however not higher than the low-beam light
In the longitudinal direction:	Max. 1,000 mm away from the foremost point of the vehicle
Attachment width:	Max. 400 mm from the most outside point of the vehicle width.
Geom. field of vision:	Horizontal $\pm 10^\circ$. Vertical 30° to 60° to the outside
Electrical switching:	Switched so that they can only be switched on when the high-beam and low-beam lights are switched on. Only switched on when the direction indicator is switched on on the same side of the vehicle and/or when the steering angle changes from the straight-ahead position. Automatic deactivation when the direction indicator cuts out and / or when the steering returns to the straight-ahead position.
Closed circuit tell-tale:	None
Other regulations:	The bending lights may not be switched on at speeds > 40 km/h.

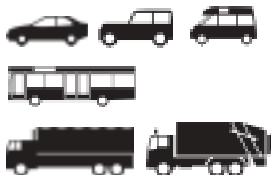
Side lighting



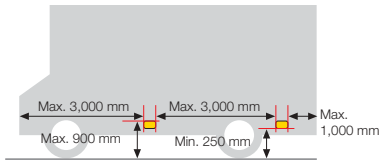
Side direction indicator (indicator)



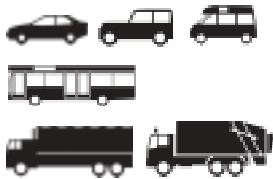
Applies for:



Attachment:	<p>Category 5 (minimum light strength = 0.6 cd) Prescribed for M₁ vehicles Prescribed for N₁, M₂ and M₃ vehicles ≤ 6 m.</p> <p>Category 6 (minimum light strength = 50 cd) Prescribed for N₁ and N₃ vehicles Prescribed for N₁, M₂ and M₃ vehicles > 6 m.</p>
Number:	1 on each side of the vehicle
Colour:	Amber
Attachment height:	Min. 350 mm for M ₁ vehicles and N ₁ vehicles Min. 500 mm for all other vehicle classes Max. 1,500 mm (Exception: 2,300 mm)
Mounted longwise:	Max. 1,800 mm from the front, measured from the most outside point (exception: 2,500 mm)
Geom. field of vision:	Horizontal min. 5° to 60° rear. Vertical ± 15°, however for attachment heights of < 750 mm also 5° downwards. For category 6 however an additional 30° over and 15° below the horizontal line
Electrical switching:	Prescribed. It must shine independent of the other lamps. They need to be switched on and off on the same side of the vehicle by the same activation device. They must flash synchronously.
Closed circuit tell-tale:	None
Other regulations:	Side direction indicators of the category 5 may always be replaced with category 6. For M ₂ , M ₃ , N ₂ and N ₃ > 9 m Length = max. 3 additional category 5 or 1 additional category 6 possible.

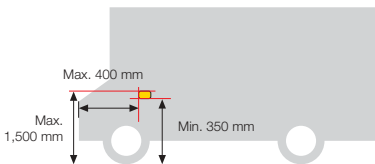


Applies for:



Side reflectors

Attachment:	Prescribed for all vehicles > 6 m, exception M ₁ = 6 - 7 m
Number: (>6 m / M₁ = 6 - 7 m)	At least one in the front and / or rear third
Attachment:	Approved for all vehicles ≤ 6 m.
Number: (< 6 m)	At least one in the middle third or one in the front and / or rear third
Colour:	Front amber, rear amber (in combination with the rearlight, red is also possible)
Form:	Not triangular
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm). Not more than 1,200 mm, if it is installed with another light function.
Mounted longwise:	Min. 1 reflector in middle third. The reflector attached at the most foremost point is max. 3 m from the front vehicle point. Max. 3 m between the individual reflectors (exception: 4 m). This does not apply to M ₁ vehicles and N ₁ vehicles. Max. clearance from rear 1 m.
Geom. field of vision:	Horizontal ± 45°. Vertical ± 10°, however for an attachment height of < 750 mm 5° downwards
Other regulations:	The shining surface of the reflector may be integrated into the side indicator light. The max. attachment height of the reflector needs to be observed here.

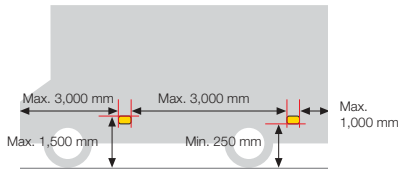


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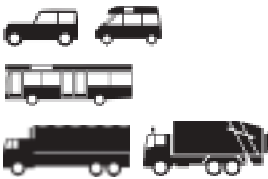


Parking lights, side

Attachment:	Approved for vehicles ≤ 6 m length and ≤ 2 m wide. Prohibited for all other vehicles.
Number:	2 lights at the front and 2 lights at the back or 1 light on each side.
Colour:	Amber
Attachment height:	No specific regulations for M ₁ vehicles and N ₁ vehicles. For all other vehicle classes: Min. 350 mm, max. 1,500 mm (exception: 2,100 mm).
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. If only 2 lights are attached, mount on the vehicle sides.
Electrical switching:	The parking lights also need to work even if no other lights are switched on.
Closed circuit tell-tale:	Approved. If there is a control unit, it may not be confused with the control unit for the sidelights and taillights.
Other regulations:	Usually, the function of the parking lights is assumed by the taillights and sidelights.



Applies for:



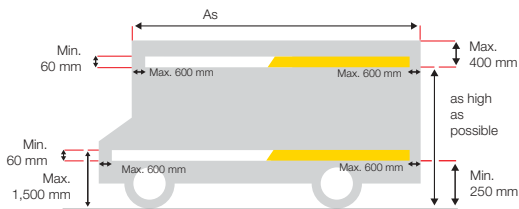
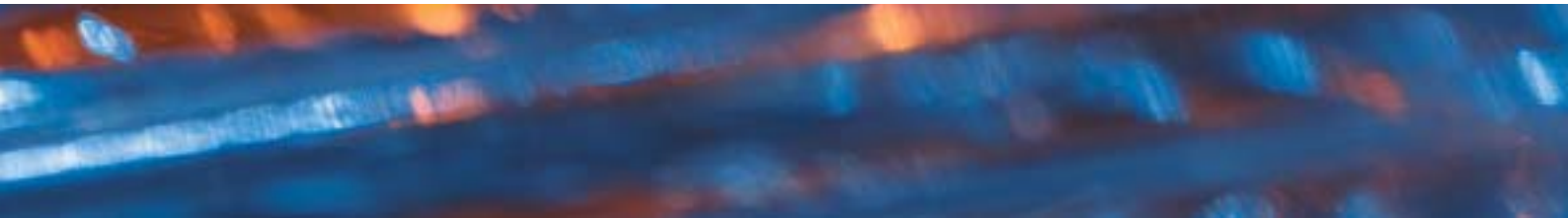
Side marker light

Attachment:	Prescribed for all vehicles > 6 m and for $M_1 = 6 - 7$ m except for chassis with driver's cab Permitted for all other motor vehicles.
Number: (>6 m / $M_1 = 6 - 7$ m)	At least one in the front and / or rear third
Attachment:	Prescribed for M_1 vehicles and N_1 vehicles with vehicle lengths ≤ 6 m, if the geometric visibility of the sidelights and taillights needs to be compensated.
Number: (≤ 6 m)	At least one in the middle third or one in the front and / or rear third
Colour:	Front amber, rear amber (in combination with the rearlight, red is also possible)
Attachment height:	Min. 250 mm, max. 1,500 mm (exception: 2,100 mm)
Mounted longwise:	Max. 3 m from the front, max. 1 m rear, max. 3 m between the individual side marker lights (exception: 4 m)
Geom. field of vision:	Horizontal $\pm 45^\circ$. For vehicles in which the attachment is allowed, however $\pm 30^\circ$. Vertical $\pm 10^\circ$, however for an attachment height of < 750 mm 5° downwards
Electrical switching:	For M_1 vehicles and N_1 vehicles that are < 6 m long, side marker lights may also act as indicators. They must flash with the same frequency as the direction indicators on the same side. No special regulations for all other vehicles.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The shining surface of the reflector may be integrated into the side indicator light. Here, the max. attachment height (1,200 mm) of the reflector needs to be observed. The rear side marker lights must be amber if they flash together with the rear direction indicator.

Note:

SM1-light: Light value min. 4 cd = Use on all vehicle classes

SM2-light: Light value min. 0.6 cd = Only for use on vehicles of the M_1 class



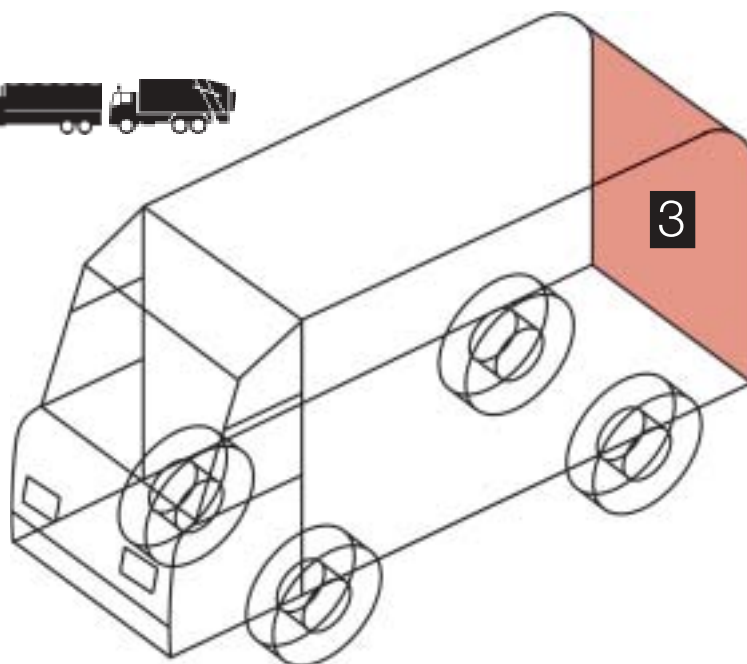
Applies for:



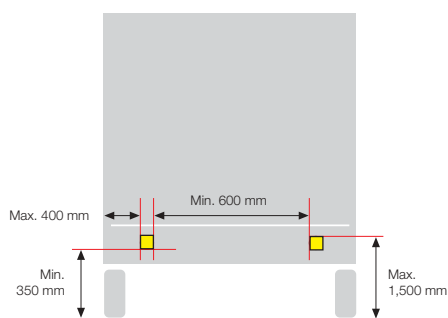
Conspicuous markings (ECE R no 104)

Prescribed:	<p>Partial contour marking on the vehicle of the next class with a width > 6,000 mm:</p> <ul style="list-style-type: none"> ■ N₂ > 7.5 t and N₃ (exception chassis with driver's cab, incomplete vehicles and semi-trailer tractors). However, if it is not possible to attach the prescribed contour marking, line markings may be attached. Allowed on vehicles of all other classes except M₁.
General:	<p>However, if it is not possible to attach the prescribed contour markings due to the shape, structure, type of operating conditions, line markings may be attached. Full contour markings may be used instead of partial contour markings. Partial or full contour markings may be used instead of line markings.</p>
Attachment diagram:	Horizontal and vertical if compatible with the form, attachment and model
Colour:	White or amber
Attachment width:	As far outside as possible. The effective total width of the horizontal marking must be min. 80 % of the vehicle width. If this is not technically feasible, this value can be reduced to 60%.
Attachment height:	<p>Lower marking: min. 250 mm above the ground, max. 1500 mm above the ground (exception up to 2,100 mm). Upper marking: As high as possible, max. 400 mm from the upper edge of the vehicle.</p>
Mounted longwise:	<p>Continuous up to max. 600 mm from the two outer edges.</p> <ul style="list-style-type: none"> – for vehicles, at each end of the vehicle – for semi-trailer tractors at each end of the driver's cab. <p>The total length of the horizontal markings must be min. 80 % of the value of the following dimensions:</p> <ul style="list-style-type: none"> – for vehicles: length of vehicle (without driver's cab) – for semi-trailer tractors: length of the driver's cab. <p>If this is not technically feasible, this value can be reduced to 60%.</p>
Geom. visibility:	Min. 80% of the marking must be visible to an onlooker See ECE R 48 § 6.21.5
Positioning to the side:	As parallel as possible to the longitudinal centerline of the vehicle
Other regulations:	<ol style="list-style-type: none"> 1. Conspicuous markings are deemed continuous, if the clearances between parts arranged next to each other is as small as possible and is no more than 50 % of the shortest length of one of these parts. 2. In the case of a partial contour marking, each upper corner must be clearly marked by two lines at an angle of 90°; each line must be min. 250 mm long. 3. The areas of the vehicle to which the conspicuous markings are to be attached, must be big enough to bear markings that are min 60 mm wide.

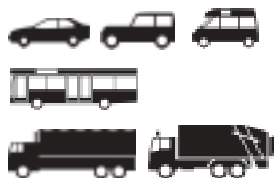
Rear lighting



Rear direction indicator (indicator)



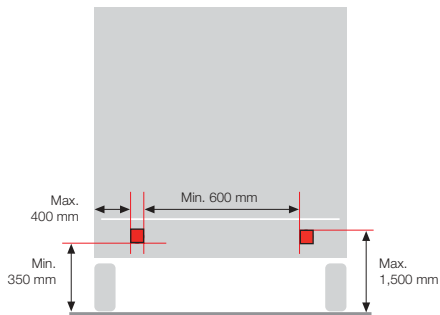
Applies for:



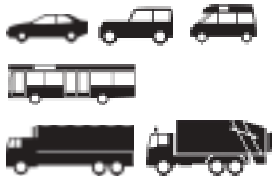
Attachment:	Prescribed for all passenger car classes. Category 2a or 2b.
Number:	2 units
Colour:	Amber
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if no additional indicators are mounted). Attachment height of the additional indicators: Min. 600 mm above the prescribed indicators.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. This does not apply to the additional indicators. Min. 600 mm between the two indicators, however min. 400 mm for vehicle widths < 1,300 mm
Geom. field of vision:	Horizontal 45° inside to 80° outside 45°, except if the side marker lights also flash, vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards.
Electrical switching:	It must shine independent of the other lamps. They need to be switched on and off on the same side of the vehicle by the same activation device. They must flash synchronously.
Closed circuit tell-tale:	Prescribed. The function control is prescribed for the front and rear direction indicators. Vehicles equipped to pull a trailer need to have a special function control for the direction indicators of the trailer, unless every malfunction in a direction indicator of the towing elements can be signalled via the control unit of the pulling unit.
Other regulations:	Attachment of 2 additional indicators on all vehicles of the classes M ₂ , M ₃ , N ₂ and N ₃ is allowed.

Note:

- Category 2a: a light strength level = Light values min. 50 cd
- Category 2b: two light strength levels = Light values during the day of min. 175 cd
Light values at night min. 40 cd



Applies for:

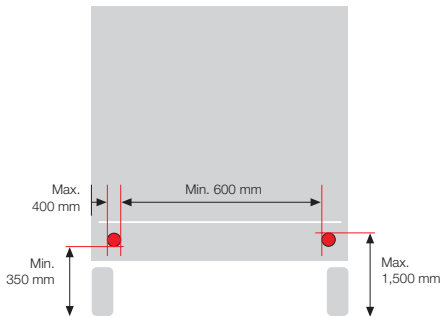


Taillight

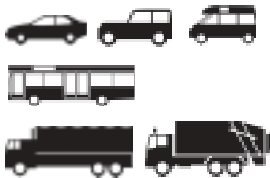
Attachment:	Prescribed for all passenger car classes. Categories R, R1 or R2.
Number:	2 units
Colour:	Red
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if no additional side lights are attached). Attachment height of the additional taillights Min. 600 mm above the prescribed taillights.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. This does not apply to the additional taillights. Clearance between the taillights for M ₁ vehicles and N ₁ vehicles not defined. For all other vehicle classes min. 600 mm between both taillights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 45° inside to 80° outside. 45° for M ₁ and N ₁ vehicles, if a side marker light is attached. Vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Prescribed. It must be combined with the control unit for the sidelights.
Other regulations:	Except if contour lights are attached, two additional sidelights and taillights can be attached to all vehicles of the classes M ₂ , M ₃ , N ₂ and N ₃ .

Note:

Category R or R1 = Light values min. 4 cd, max. 12 cd
Category R2 = Light values min. 4 cd, max. 30 cd



Applies for:

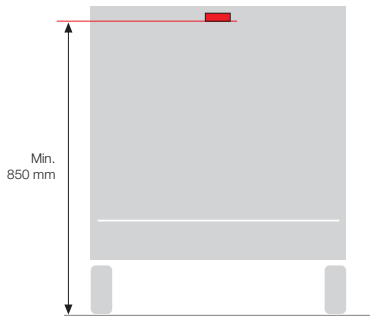


Stoplight

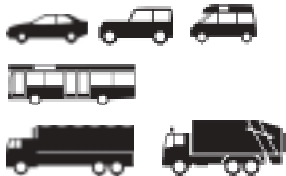
Attachment:	Prescribed for all passenger car classes. Category S1 or S2.
Number:	2 units Except if stoplights of the category S3 or S4 are attached, two additional stoplights of the category S1 or S2 can be attached to vehicle classes M ₂ , M ₃ , N ₂ and N ₃ .
Colour:	Red
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if 2 additional stoplights are not mounted). Attachment height of the additional stoplights: Min. 600 mm above the prescribed stoplights.
Attachment width:	For M ₁ vehicles and N ₁ vehicles, max. 400 mm from the most outside point of the vehicle width. No regulations regarding the clearance between the stoplights. For all other vehicle classes min. 600 mm between both stoplights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal ± 45°. Vertical ± 15°, however for an attachment height of < 750 mm (lower edge of the shining surface) also 5° downwards. The vertical angle above the horizontal line can be reduced to 5°, if the attachment height of the additional stoplights is greater than 2,100 mm.
Electrical switching:	Must shine when the brake is pressed.
Closed circuit tell-tale:	Approved. If there is one, only as a function control light in the shape of a non-flashing warning lamp that shines in the event of a fault.
Other regulations:	The clearance of the S1 or S2 stoplight to the rear fog light must be > 100 mm.

Note:

Category S1 constant = Light values min. 60 cd
 Category S2 variable = Light values min. 60 cd



Applies for:

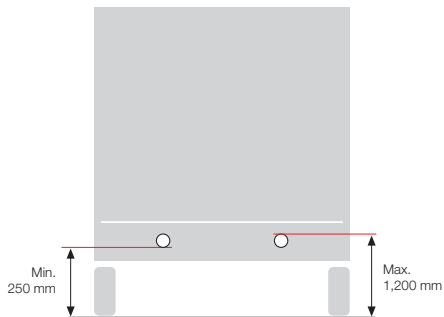


High-mounted stop lamp

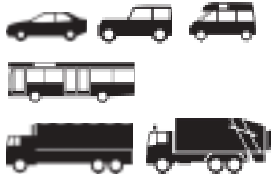
Attachment:	Prescribed for vehicle classes M ₁ and N ₂ , category S3 or S4. Except chassis with driver's cabs and N ₂ vehicles with an open loading space. Approved for other vehicle classes.
Number:	1 unit If the longitudinal centerline of the vehicle does not pass through a firm attachment wall but is separated e.g. by doors and there is no space for a S3 or S4 stoplight, two S3 or S4 stoplights of the type "D" stoplight or S3 or S4 stoplight can be attached to the left or right of the longitudinal centerline.
Colour:	Red
Attachment height:	Either max. 150 mm below the rear window or min. 850 mm above the ground, above the S1 and S2 stoplights.
Attachment width:	The reference point must lie in the longitudinal centerline of the vehicle. If two S3 or S4 stoplights are attached, each one needs to be attached as close as possible to the longitudinal centerline. If only one S3 or S4 stoplight is attached next to the longitudinal centerline, the clearance may not be greater than 150 mm.
Geom. field of vision:	Horizontal ± 10°. Vertical 10° over and 5° below the horizontal line
Electrical switching:	Must light up when the braking system sends a corresponding signal.
Closed circuit tell-tale:	Approved. If there is one, only as a function control light in the shape of a non-flashing warning lamp that shines in the event of a fault.
Other regulations:	The S3 or S4 stoplight can be attached outside or inside the vehicle. If it is attached inside, it may not dazzle the driver. An S3 or S4 stoplight may not be built into another light.

Note:

- Category S3 high-mounted stoplight = Light values min. 25 cd, max. 80 cd
- Category S3 type "double light" = Light values min. 25 cd, max. 55 cd
- Category S4 high-mounted stoplight variable = Light values min. 25 cd, max. 114 cd
- Category S4 type "D" double light variable = Light values min. 25 cd, max. 80 cd

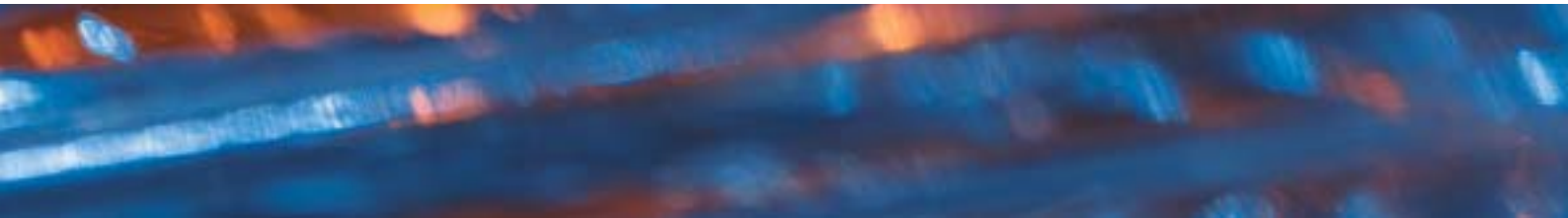


Applies for:

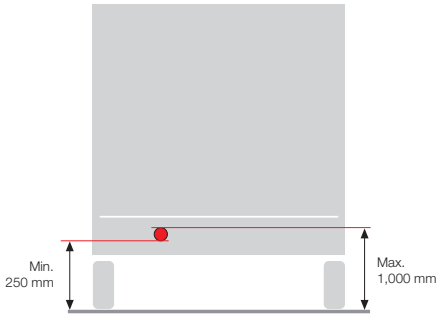


Reversing spotlights

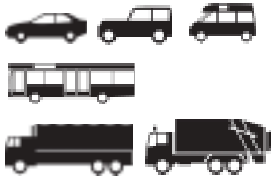
Attachment:	Prescribed for all passenger car classes
Number:	Vehicle lengths ≤ 6 m = 1 unit prescribed, a 2nd one on M ₁ vehicles and all other vehicle classes. Vehicle lengths > 6 m, except M ₁ vehicles, 2 units prescribed and 2 additional units allowed for all other vehicle classes.
Colour:	White
Attachment height:	Min. 250 mm, max. 1,200 mm
Attachment width:	No regulations
Geom. field of vision:	1 lamp: horizontal $\pm 45^\circ$. 2 lamps: horizontal 30° inside to 45° outside. Vertical 15° above, to 5° downwards.
Electrical switching:	Only activated when the reverse gear is engaged. The electrical switching of the additional reversing spotlight must be designed so that the reversing spotlights only shine if the sidelight, taillight, sider marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved
Other regulations:	It is possible to mount additional reversing spotlights at the rear or side of the vehicle. Side reversing light is allowed for vehicles with a speed of up to 10 km/h, if there is an automatic cut-out. The device must be switched on and off with a switch.



Rear fog light



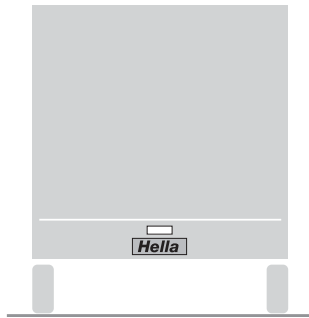
Applies for:



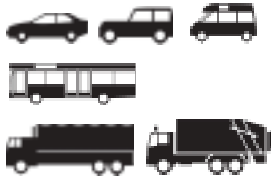
Attachment:	Prescribed for all passenger car classes. Category F, F1 or F2.
Number:	1 or 2 units
Colour:	Red
Attachment height:	Min. 250 mm, max. 1,000 mm. For N _{3G} > 1,200 mm
Attachment width:	No regulations
General attachment:	For 1 rear fog light: Left of centre = right-hand traffic, right of centre = left-hand traffic. Attachment in the middle is allowed
Geom. field of vision:	Horizontal ± 25° Vertical ± 5°
Electrical switching:	Only switched on when the low-beam, high-beam or fog lights are switched on.
Closed circuit tell-tale:	Prescribed. An independent, non-flashing control lamp.
Other regulations:	The clearance to the stoplight must be > 100 mm. The rear fog light of the tractor vehicle can switch off automatically if a trailer is attached and its rear fog light is thereby switched on.

Note:

Category F or F1 constant = Light values min. 150 cd, max. 300 cd
 Category F2 variable = Light values min. 150 cd, max. 840 cd



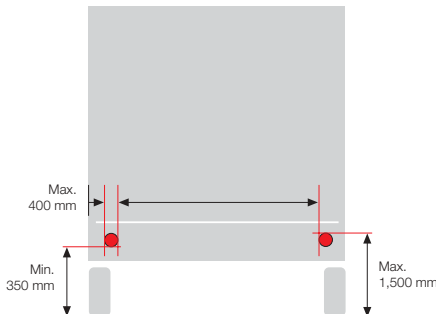
Applies for:



Licence plate light

Attachment:	Prescribed for all passenger car classes
Number:	1 or more
Colour:	White
Attachment of the licence plate:	Middle or left (or right for driving on the left)
Electrical switching:	Must be designed so that the sidelight, taillight and side marker lights can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.

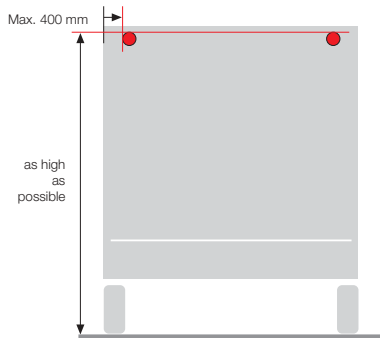
Parking lights, rear



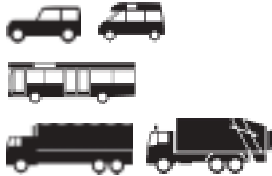
Applies for:



Attachment:	Approved for vehicles ≤ 6 m length and ≤ 2 m wide. Prohibited for all other vehicles.
Number:	2 lights at the front and 2 lights at the back or 1 light on each side.
Colour:	Red
Attachment height:	No specific regulations for M ₁ vehicles and N ₁ vehicles. For all other vehicle classes: Min. 350 mm, max. 1,500 mm (exception: 2,100 mm)
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. If only two lights are attached, then attach to the vehicle sides.
Electrical switching:	The parking lights also need to work even if no other lights are switched on.
Closed circuit tell-tale:	Approved. If there is a control unit, it may not be confused with the control unit for the sidelights and taillights.
Other regulations:	Usually, the function of the parking lights is assumed by the taillights and sidelights.



Applies for:

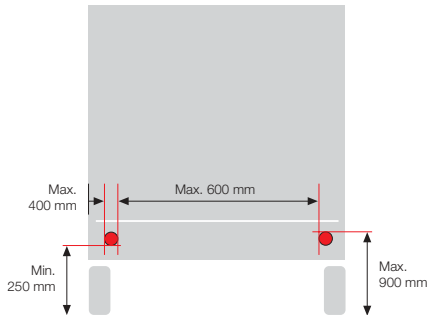


Rear contour light

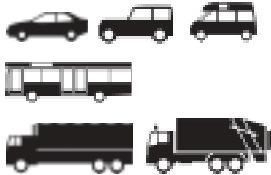
Attachment:	Prescribed for vehicles > 2.1 m wide Approved for vehicles > 1.8 m length and \leq 2.1 m wide. Category R, R1a or R2.
Number:	2 units
Colour:	Red
Attachment height:	As high as possible
Attachment width:	As far outside as possible, max. 400 mm from the most outside point of the vehicle width.
Geom. field of vision:	Horizontal 80° to the outside Vertical 5° over and 20° below the horizontal line
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The front white and rear red contour lights may be combined in one light unit as long as the installation instructions and angle of vision ranges are satisfied. Clearance of the contour light to the taillight min. 200 mm. Every taillight or tail reflector can be used. Additional reflection parts are allowed. Fitting of 2 additional contour lights allowed. Attachment height and width as described above!

Note:

Category R or R1 = Light values min. 4 cd, max. 12 cd
Category R2 = Light values min. 4 cd, max. 30 cd

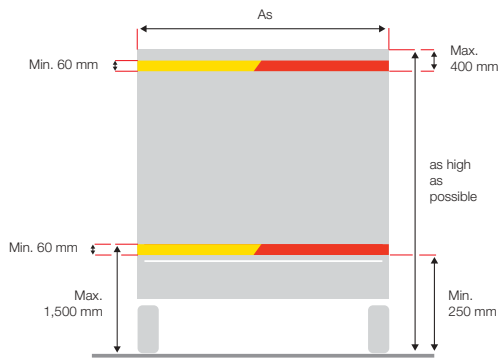


Applies for:



Rear reflectors

Attachment:	Prescribed for all passenger car classes
Number:	2 units
Colour:	Red
Form:	Not triangular
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm) Not more than 1,200 mm, if it is installed with another rear light function.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. The clearance between the reflectors for M ₁ vehicles and N ₁ vehicles is not defined. For all other vehicle classes min. 600 mm between both reflectors, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal $\pm 30^\circ$. Vertical $\pm 10^\circ$, however for an attachment height of < 750 mm 5° downwards
Other regulations:	The shining surface of the reflector may be integrated into the rearlight. The max. attachment height of the reflector needs to be observed here.



Applies for:

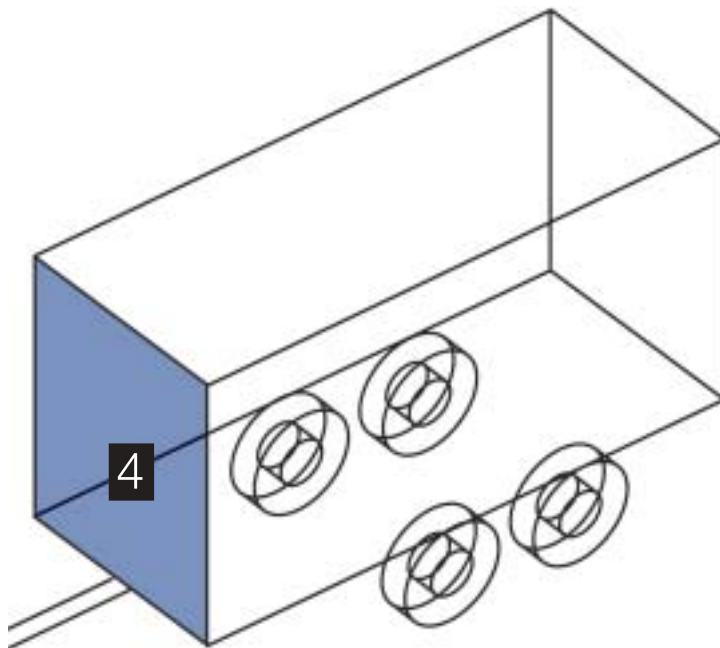


Conspicuous markings (ECE R 104)

Prescribed:	Full contour markings to the next classes with a width > 2,100 mm ■ N ₂ > 7.5 t and N ₃ (exception chassis with driver's cab, incomplete vehicles and semi-trailer tractors)
General:	However, if it is not possible to attach the prescribed contour markings due to the shape, structure, type of operating conditions, line markings may be attached. Full contour markings may be used instead of partial contour markings. Partial or full contour markings may be used instead of line markings.
Attachment diagram:	Horizontal and vertical if compatible with the form, attachment and model
Colour:	Red or amber. Some countries allow white!
Attachment width:	As far outside as possible. The effective total width of the horizontal marking must be min. 80 % of the vehicle width. If this is not technically feasible, this value can be reduced to 60%.
Attachment height:	Lower marking: min. 250 mm above the ground, max. 1500 mm above the ground (exception up to 2,100 mm). Upper marking: as high as possible, max. 400 mm from the upper edge of the vehicle.
Geom. visibility:	Min. 80% of the marking must be visible to an onlooker See ECE R 48 § 6.21.5
Positioning to the rear:	As parallel as possible to the cross level of the vehicle
Other regulations:	<ol style="list-style-type: none"> 1. Conspicuous markings are deemed continuous, if the clearances between parts arranged next to each other is as small as possible and is no more than 50 % of the shortest length of one of these parts. 2. The clearance between the conspicuous markings attached at the rear of the vehicle and every prescribed stoplight should be greater than 200 mm. 3. If rear licence plats of the regulation ECE R70 are attached, these can be considered as part of the rear conspicuous marking at the manufacturer's discretion when calculating the conspicuous marking and its clearance to the side of the vehicle. 4. The areas of the vehicle to which the conspicuous markings are to be attached, must be big enough to bear markings that are min 60 mm wide.

Statutory regulations pursuant to ECE ruling 48

Front lighting



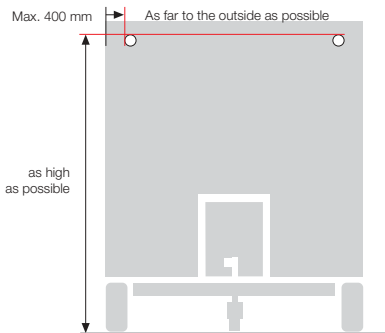
Legal regulations for lights

Due to the scope of the statutory regulations, only the most important are explained here. The following regulations contain all the relevant information about signal lights, their properties and uses.

Trailer/caravan classes

Vehicle class	
O ₁	Trailers up to 0.75 t
O ₂	Trailers over 0.75 t to 3.5 t
O ₃	Trailers over 3.5 t to 10 t
O ₄	Trailers over 10 t

- **ECE-R 3**
Reflectors
- **ECE-R 4**
Licence plate light
- **ECE-R 6**
Direction indicator rear and side
- **ECE-R 7**
Sidelight, taillight, stoplight and contour lights
- **ECE-R 23**
Reversing spotlights
- **ECE-R 38**
Rear fog lights
- **ECE-R 48**
For attachment and use
- **ECE-R 77**
Parking lights, front and rear
- **ECE-R 91**
Side marker lights
- **ECE-R 104**
Contour markings



Applies for:

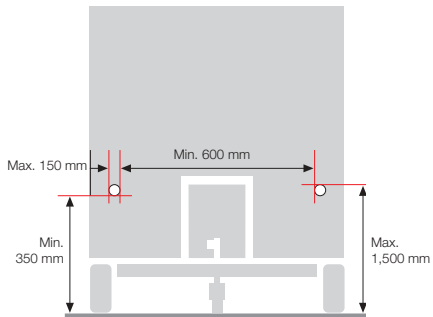


Front contour light

Attachment:	Prescribed for all trailers > 2.1 m wide Approved for trailers > 1.8 m to ≤ 2.1 m width. Category R, R1 or R2.
Number:	2 units
Colour:	White
Attachment height:	As high as possible
Attachment width:	As far outside as possible, max. 400 mm from the most outside point of the vehicle width.
Geom. field of vision:	Horizontal 80° to the outside, vertical 5° over and 20° below the horizontal line
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The front white and rear red contour lights may be combined in one light unit as long as the installation instructions and angle of vision ranges are satisfied. Any sidelight or sidelight reflector can be used. Additional reflection parts are allowed. Fitting of 2 additional contour lights allowed. Attachment height and width as described above!

Note:

Category R or R1 = Light values min. 4 cd, max. 12 cd
Category R2 = Light values min. 4 cd, max. 30 cd

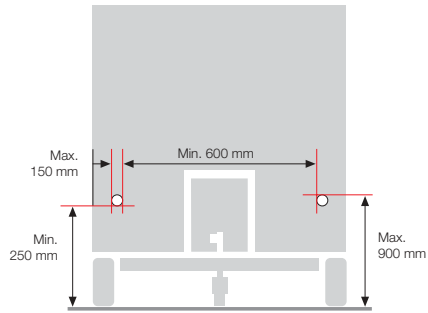
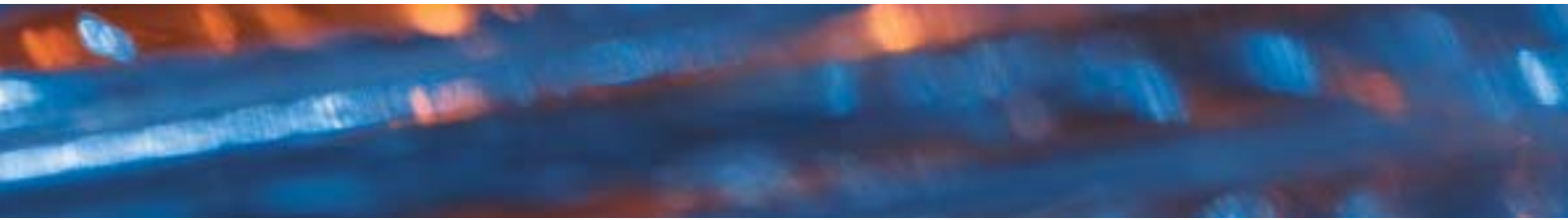


Applies for:



Front sidelight

Attachment:	Prescribed for all trailers > 1.6 m wide Approved for trailers ≤ 1.6 m wide.
Number:	2 units
Colour:	White
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only for trailers of the classes O ₁ and O ₂ or if max. 1,500 mm is not possible for other trailers).
Attachment width:	Max. 150 mm from the most outside point of the vehicle width. Min. 600 mm between both sidelights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 5° inside to 80° outside, vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Prescribed. The control lamp may not flash. Not necessary if the lighting equipment in the dashboard can only be switched on at the same time as the sidelights.
Other regulations:	The shining surface of the reflector may be integrated into the rearlight. The attachment height of the reflector needs to be observed here.



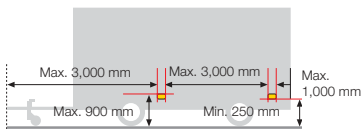
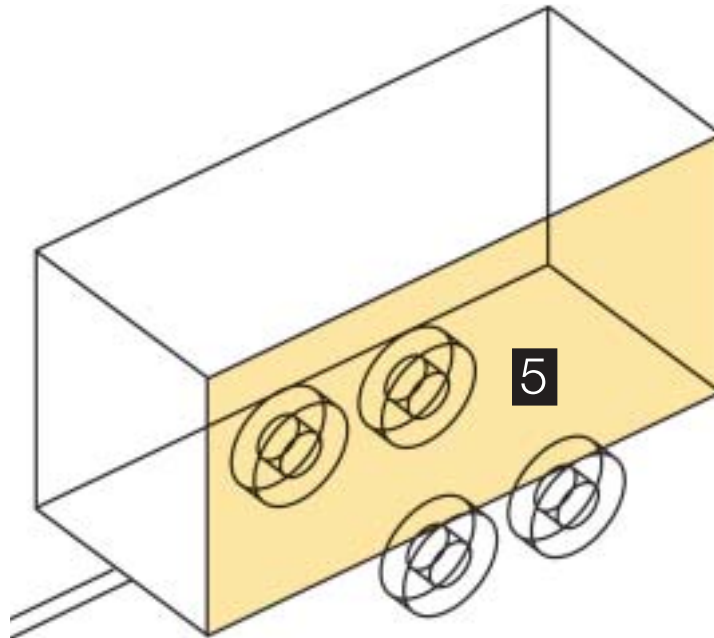
Applies for:



Front reflector

Attachment:	Prescribed for all trailers
Number:	2 units
Colour:	White
Form:	Not triangular
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm)
Attachment width:	Max. 150 mm, min. 600 mm between both reflectors, however min. 400 mm for vehicle widths < 1,300 mm
Geom. field of vision:	Horizontal 10° inside and 30° outside. Vertical ± 10°, however for an attachment height of < 750 mm 5° downwards
Other regulations:	The shining surface of the reflector may be integrated into the rearlight. The attachment height of the reflector needs to be observed here!

Side lighting

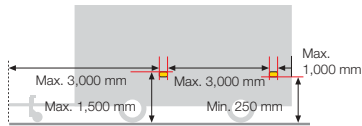


Applies for:



Side reflector

Attachment:	Prescribed for all trailers
Number:	Min. 1 in middle third
Colour:	Amber
Form:	Not triangular
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm)
Attachment width:	Max. 3 m from the front (incl. towing bar), max. 1 m from the rear, max. 3 m between the individual reflectors (exception: 4 m)
Geom. field of vision:	Horizontal $\pm 45^\circ$. Vertical $\pm 10^\circ$, however for an attachment height of < 750 mm 5° downwards
Other regulations:	The shining surface of the reflector may be integrated into the side indicator light. The max. attachment height of the reflector needs to be observed here.



Applies for:

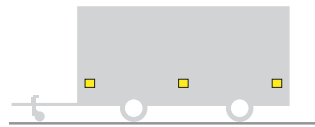


Side marker light (SM1)

Attachment:	Prescribed for trailers > 6 m long Approved for trailers < 6 m long
Number: (≤ 6 m) (>6 m)	Min. 1 in middle third At least one in the middle and / or rear third
Colour:	Front amber, rear amber (in combination with the rearlight, red is also possible)
Attachment height:	Min. 250 mm, max. 1,500 mm (exception: 2,100 mm)
Mounted longwise:	Max. 3 m from the front (incl. towing bar), max. 1 m from the back, max. 3 m between the two side marker lights (exception: 4 m)
Geom. field of vision:	Horizontal ± 45°. Vertical ± 10°, however for an attachment height of < 750 mm 5° downwards
Electrical switching:	No regulations
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The shining surface of the reflector may be integrated into the side indicator light. The max. attachment height of the reflector needs to be observed here.

Note

SM1-light: light value min. 4 cd = Use on all trailer classes

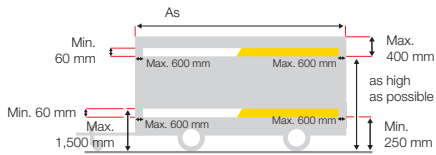


Applies for:



Additional side direction indicator (indicators) (ECE regulation no. 6)

Attachment:	Approved for O ₂ , O ₃ and O ₄ vehicles > 9 m length
Number:	max. 3 lights category 5 or 1 light category 6 one each side of the vehicle
Colour:	Amber
Attachment height:	No regulations
Mounted longwise:	Category 5 = distributed evenly along the length of the trailer Category 6 = Between the 1st and the last quarter of the trailer
Geom. field of vision:	No regulations
Electrical switching:	It must shine independent of the other lamps. They need to be switched on and off on the same side of the vehicle by the same activation device.
Control unit:	None
Other regulations:	None



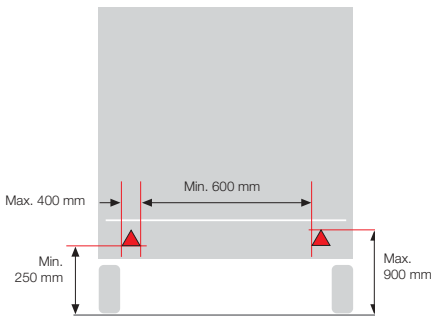
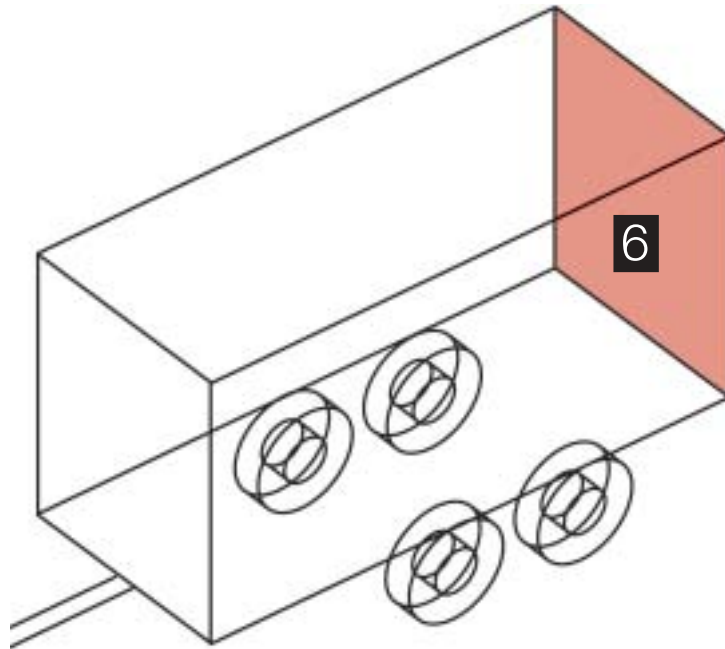
Applies for:



Conspicuous markings (ECE R no 104)

Prescribed:	<p>Partial contour marking on the vehicle of the next class with a length > 6,000 mm:</p> <ul style="list-style-type: none"> ■ O₃ and O₄ <p>However, if it is not possible to attach the prescribed contour marking, line markings may be attached. Approved on vehicles of all other classes, except O₁.</p>
General:	<p>However, if it is not possible to attach the prescribed contour markings due to the shape, structure, type of operating conditions, line markings may be attached.</p> <p>Full contour markings may be used instead of partial contour markings.</p> <p>Partial or full contour markings may be used instead of line markings.</p>
Attachment diagram:	Horizontal and vertical if compatible with the form, attachment and model
Colour:	White or amber
Attachment width:	As far outside as possible. The effective total width of the horizontal marking must be min. 80 % of the vehicle width. If this is not technically feasible, this value can be reduced to 60%.
Mounted longwise:	<p>Continuous up to max. 600 mm from the two outer edges.</p> <ul style="list-style-type: none"> ■ For trailers, at each end of the vehicle (without towing bar). The total length of the horizontal markings must be min. 80 % of the value of the following dimensions: ■ For trailers: vehicle length (without towing bar) <p>If this is not technically feasible, this value can be reduced to 60%.</p>
Attachment height:	<p>Lower marking: min. 250 mm above the ground, max. 1500 mm above the ground (exception up to 2,100 mm).</p> <p>Upper marking: as high as possible, max. 400 mm from the upper edge of the vehicle.</p>
Geom. visibility:	Min. 80% of the marking must be visible to an onlooker See ECE R 48 § 6.21.5
Positioning to the side:	As parallel as possible to the longitudinal centerline of the vehicle
Other regulations:	<ol style="list-style-type: none"> 1. Conspicuous markings are deemed continuous, if the clearances between parts arranged next to each other is as small as possible and is no more than 50 % of the shortest length of one of these parts. 2. In the case of a partial contour marking, each upper corner must be clearly marked by two lines at an angle of 90°; each line must be min. 250 mm long. 3. The areas of the vehicle to which the conspicuous markings are to be attached, must be big enough to bear markings that are min 60 mm wide.

Rear lighting

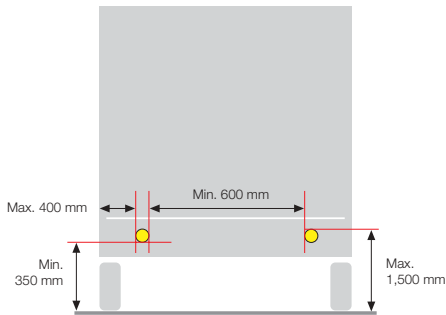
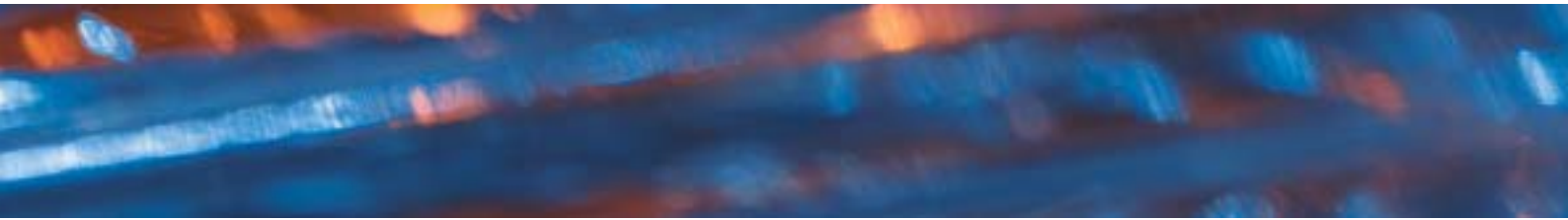


Applies for:



Rear reflectors

Attachment:	Prescribed for all trailers
Number:	2 units
Colour:	Red
Form:	Triangular
Attachment diagram:	The tip of the triangle must point upwards.
Attachment height:	Min. 250 mm, max. 900 mm (exception: 1,500 mm)
Attachment width:	Max. 400 mm from the most outside point of the vehicle width, however min. 600 mm between the two reflectors, however min. 400 mm for vehicle widths < 1,300 mm
Geom. field of vision:	Horizontal $\pm 30^\circ$. Vertical $\pm 15^\circ$, however for an attachment height of < 750 mm 5° downwards
Other regulations:	The attachment of a taillight with an integrated triangular reflector is approved on trailers. Additional reflection parts are allowed.



Applies for:



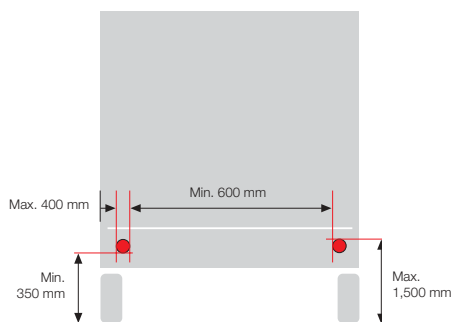
Rear direction indicator (indicator)

Attachment:	Prescribed for all trailers. Category 2a or 2b.
Number:	2 units
Colour:	Amber
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if no 2 additional indicators are mounted). Attachment height of the additional indicators: min. 600 mm above the prescribed indicators.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. This does not apply for the additional indicators. Min. 600 mm between the two indicators, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 45° inside to 80° outside. Vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards.
Electrical switching:	It must shine independent of the other lamps. They need to be switched on and off on the same side of the vehicle by the same activation device. They must flash synchronously.
Control unit:	Prescribed. The function control is prescribed for the front and rear direction indicators. Vehicles equipped to pull a trailer need to have a special function control for the direction indicators of the trailer, unless every malfunction in a direction indicator of the towing elements can be signalled via the control unit of the pulling unit. The function control is not necessary for the two additional direction indicators on trailers.
Other regulations:	Attachment of 2 additional indicators (2a or 2b) on all vehicles of the classes O ₂ , O ₃ , O ₄ is allowed.

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Note:

Category 2a: a light strength level = Light values min. 50 cd, max. 350 cd
 Category 2b: two light strength levels = Light values during the **day** min. 175 cd, max. 700 cd, if 2 indicators per side 980 cd
 Light values at **night** min. 40 cd, max. 120 cd, if there are 2 indicators on each side max. 168 cd



Applies for:



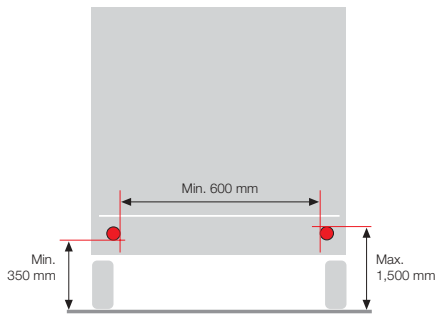
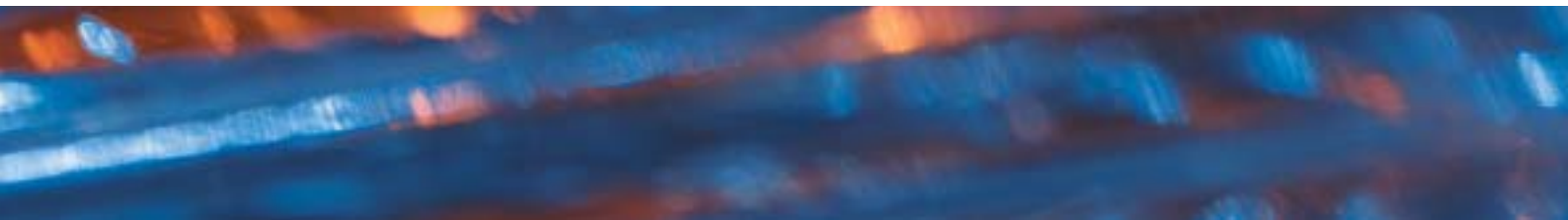
Taillight

Attachment:	Prescribed for all trailers. Category R, R1 or R2.
Number:	2 units
Colour:	Red
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if 2 additional side lights are not attached). attachment height of the additional taillights Min. 600 mm above the prescribed taillights.
Attachment width:	Max. 400 mm from the most outside point of the vehicle width. This does not apply to the additional taillights. Min. 600 mm between the two taillights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal 45° inside to 80° outside. Vertical ± 15°, however for an attachment height of < 750 mm also 5° downwards
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Prescribed. It must be combined with the control unit for the sidelights.
Other regulations:	Except if contour lights are attached, 2 additional sidelights and taillights can be attached to all trailers of the classes O ₂ , O ₃ , O ₄ .

Note:

Category R or R1 = Light values min. 4 cd, max. 12 cd

Category R2 = Light values min. 4 cd, max. 30 cd



Applies for:



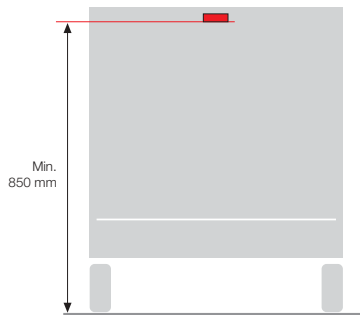
Stoplight

Attachment:	Prescribed for all trailers. Category S1 or S2.
Number:	2 units Except is stoplights of the category S3 or S4 are attached, two additional stoplights of the category S1 or S2 can be attached to vehicle classes O ₂ , O ₃ and O ₄ .
Colour:	Red
Attachment height:	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm only if 2 additional stoplights are not mounted). Attachment height of the additional stoplights: Min. 600 mm above the prescribed stoplights.
Attachment width:	For all trailers min. 600 mm between both stoplights, however min. 400 mm for vehicle widths < 1,300 mm.
Geom. field of vision:	Horizontal ± 45°. Vertical ± 15°, however for an attachment height of < 750 mm (lower edge of the shining surface) also 5° downwards
Electrical switching:	Must shine when the brake is pressed.
Closed circuit tell-tale:	Approved. If there is one, only as a function control light in the shape of a non-flashing warning lamp that shines in the event of a fault.
Other regulations:	The clearance of the S1 or S2 stoplight to the rear fog light must be > 100 mm. Attachment of 2 additional stoplights of the category S1 or S2 to all trailers of the classes O ₂ , O ₃ and O ₄ is allowed. Attachment of S3 or S4 stoplights is only allowed if no additional stoplights of the category S1 or S2 are attached.

Note:

Category S1 constant
Category S2 variable

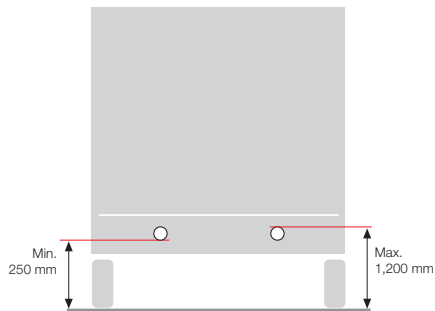
= Light values min. 60 cd, max. 185 cd
= Light values during the day min. 60 cd, max. 521 cd

**Applies for:****High-mounted stop lamp**

Attachment:	Approved for all trailers, category S3 or S4, except if additional stoplights of the category S1 or S2 are attached.
Number:	1 unit If the longitudinal centerline of the vehicle does not pass through a firm attachment wall but is separated e.g. by doors and there is no space for a S3 or S4 stoplight, two S3 or S4 stoplights of the type "D" stoplight or S3 or S4 stoplight can be attached to the left or right of the longitudinal centerline.
Colour:	Red
Attachment height:	Min. 850 mm above the ground and above the S1 and S2 stoplights.
Attachment width:	The reference point must lie in the longitudinal centerline of the trailer. If two S3 or S4 stoplights are attached, each one needs to be attached as close as possible to the longitudinal centerline. If only one S3 or S4 stoplight is attached next to the longitudinal centerline, the clearance may not be greater than 150 mm.
Geom. field of vision:	Horizontal $\pm 10^\circ$. Vertical 10° over and 5° below the horizontal line
Electrical switching:	Must light up when the braking system sends a corresponding signal.
Closed circuit tell-tale:	Approved. If there is one, only as a function control light in the shape of a non-flashing warning lamp that shines in the event of a fault.
Other regulations:	A S3 or S4 stoplight may not be built into another light.

Note:

Category S3 high-mounted stoplight	= Light values min. 25 cd, max. 80 cd
Category S3 type "double light"	= Light values min. 25 cd, max. 55 cd
Category S4 high-mounted stoplight	= Light values min. 25 cd, max. 114 cd
Category S4 type "double light"	= Light values min. 25 cd, max. 80 cd

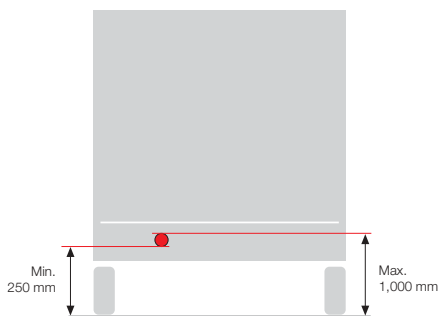


Applies for:



Reversing spotlights

Attachment:	Prescribed for all trailers of the vehicle classes O ₂ , O ₃ and O ₄ . Approved for trailers of the vehicle class O ₁ .
Number:	1 is prescribed, a 2nd one is allowed for trailers < 6 m. 2 prescribed for trailers > 6 m and 2 additional ones on all other trailers allowed
Colour:	White
Attachment height:	Min. 250 mm, max. 1,200 mm
Attachment width:	No regulations
Geom. field of vision:	1 lamp: horizontal $\pm 45^\circ$. 2 lamps: Horizontal 30° inside to 45° outside. Vertical 15° above, to 5° downwards.
Electrical switching:	Only activated when the reverse gear is engaged. The electrical switching of the additional reversing spotlight must be designed so that the reversing spotlights only shine if the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved
Other regulations:	It is possible to mount additional reversing spotlights at the rear or side of the vehicle. Side reversing light is allowed for all vehicles with a speed of up to 10 km/h, if automatic cut-out is possible. The device must be switched on and off with a switch.



Applies for:



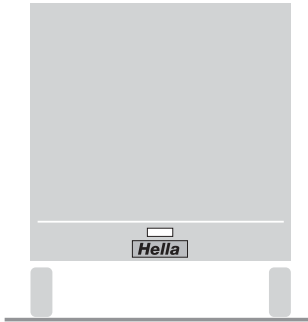
Rear fog light

Attachment:	Prescribed for all trailers. Category F, F1 or F2.
Number:	1 or 2 units
Colour:	Red
Attachment height:	Min. 250 mm, max. 1,000 mm
Attachment width:	No regulations
General attachment:	For 1 rear fog light: Left from centre = when driving on the right hand side of the road. Right from centre = when driving on the left hand side of the road. Attachment in the middle is allowed
Geom. field of vision:	Horizontal $\pm 25^\circ$. Vertical $\pm 5^\circ$.
Electrical switching:	Only switched on when the low-beam, high-beam or fog lights are switched on.
Closed circuit tell-tale:	Prescribed. An independent, non-flashing control lamp.
Other regulations:	The clearance to the stoplight must be > 100 mm.

Note:

Category F or F1 constant
Category F2 variable

= Light values min. 150 cd, max. 300 cd
= Light values min. 150 cd, max. 840 cd



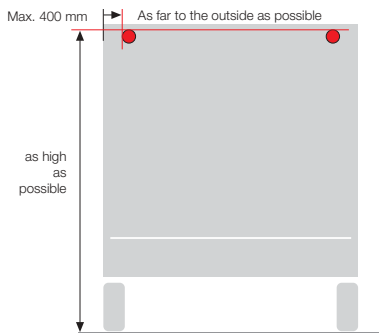
Applies for:



Licence plate light

Attachment:	Prescribed for all trailers
Number:	1 or more
Colour:	White
Attachment of the licence plate:	Middle or left (or right for driving on the left)
Electrical switching:	Must be designed so that the sidelight, taillight and side marker lights can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.

Rear contour light



Applies for:

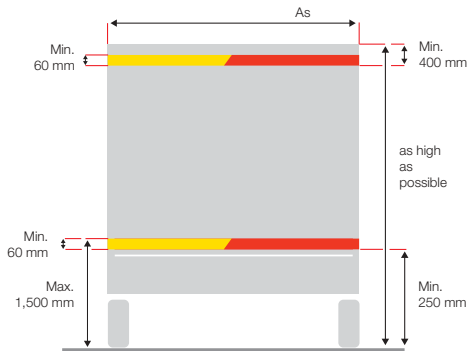


Attachment:	Prescribed for all trailers > 2.1 m wide Approved for trailers > 1.8 m to ≤ 2.1 m width, Category R, R1 or R2.
Number:	2 units
Colour:	Red
Attachment height:	As high as possible
Attachment width:	As far outside as possible, max. 400 mm from the most outside point of the vehicle width.
Geom. field of vision:	Horizontal 80° to the outside Vertical 5° over and 20° below the horizontal line
Electrical switching:	Must be designed so that the sidelight, taillight, side marker lights and licence plate light can only be switched on and off simultaneously.
Closed circuit tell-tale:	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the sidelights and taillights.
Other regulations:	The rear red and the front white contour lights may be combined in one light unit as long as the installation instructions and angle or vision ranges are satisfied. Clearance of the contour light to the taillight min. 200 mm. Every taillight or tail reflector can be used. Additional reflection parts are allowed. Fitting of two additional contour lights allowed. Attachment height and width as described above!

Note:

Category R or R1 constant
Category R2 variable

= Light values min. 4 cd, max. 12 cd
= Light values min. 4 cd, max. 30 cd



Applies for:



Conspicuous markings (ECE regulation no 104)

Prescribed:	Full contour markings to the next classes with a width > 2,100 mm: ■ N ₂ > 7.5 t and N ₃ (exception chassis with driver's cab, incomplete vehicles and semi-trailer tractors)
General:	However, if it is not possible to attach the prescribed contour markings due to the shape, structure, type of operating conditions, line markings may be attached. Full contour markings may be used instead of partial contour markings. Partial or full contour markings may be used instead of line markings.
Attachment diagram:	Horizontal and vertical if compatible with the form, attachment and model.
Colour:	Red or amber. Some countries allow white!
Attachment width:	As far outside as possible. The effective total width of the horizontal marking must be min. 80 % of the vehicle width. If this is not technically feasible, this value can be reduced to 60%.
Attachment height:	Lower marking: min. 250 mm above the ground, max. 1500 mm above the ground (exception up to 2,100 mm). Upper marking: as high as possible, max. 400 mm from the upper edge of the vehicle.
Geom. visibility:	Min. 80% of the marking must be visible to an onlooker See ECE R 48 § 6.21.5
Positioning to the rear:	As parallel as possible to the cross level of the vehicle
Other regulations:	<ol style="list-style-type: none"> 1. Conspicuous markings are deemed continuous, if the clearances between parts arranged next to each other is as small as possible and is no more than 50 % of the shortest length of one of these parts. 2. The clearance between the conspicuous markings attached at the rear of the vehicle and every prescribed stoplight should be greater than 200 mm. 3. If rear licence plates of the regulation ECE R70 are attached, these can be considered as part of the rear conspicuous marking at the manufacturer's discretion when calculating the conspicuous marking and its clearance to the side of the vehicle. 4. The areas of the vehicle to which the conspicuous markings are to be attached, must be big enough to bear markings that are min 60 mm wide.



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Hella KGaA Hueck & Co.
Rixbecker Straße 75
59552 Lippstadt, Germany

Tel.: +49 2941 38-0
Fax: +49 2941 38-7133
Internet: www.hella.com



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