All Types

Engine oil too thick.	• Change engine appropriately to all-season engine oil SAE 10 W/40 or SAE 10 W/50 • For additional engine oils, suitable for low outside temperatures, refer to the Owner's Manual.
Engine speed too low while starting	• Battery charge unsatisfactory. • Insufficient battery capacity caused by low temperatures. • Cable connections on battery or starter loose or oxidized. • Starter capacity too low. While starting, an additional 12-Volt battery may be connected to support the vehicle battery (positive to positive, negative to negative). **Caution!** Do not disconnect battery cable of vehicle with the engine running, since this will damage the alternator. • If no second battery is available, the vehicle may be tow-started in second gear in an emergency. For vehicles with automatic transmission refer to Owner's Manual, section "Tow-Starting the Vehicle".
Insufficient valve clearance	• Adjust valve clearance; see item 753.

Engine not firing – starter rotating

Gasoline engines

Ignition system not in order

- Check spark plug nipples for correct seat on spark plugs and all cables for electric contact with their connections.

Caution! Use leather gloves or dry rags when touching spark plug nipples and ignition cables with the engine rotating.

- Remove ignition distributor cap and check whether with the engine running the contact breaker points are opened by approx. 0.4 mm and a light contact spark can be seen.

Note: On vehicles with transistor ignition no contact spark will be seen.

- Wipe moist distributor cap, ignition cable and nipple with dry cloth with the ignition switched off.

- Remove spark plugs and clean or replace, as required. Check electrode gap.

- Check whether sparks are flashing over by placing spark plugs with attached nipple against ground connection (engine block) and actuate starter.

- If no ignition spark is generated, check cable connections on series resistance, ignition coil and ignition distributor for perfect condition.

In case of transistor ignition, also check for correct seat of flat plug connection on switching unit. Replace switching unit, if required.

Caution! In case of transistor ignition, do not actuate starter, when ignition cable plug is pulled from ignition coil.

Risk of defect on ignition coil and switching unit.

Fuel system not in order

Carburetor engines

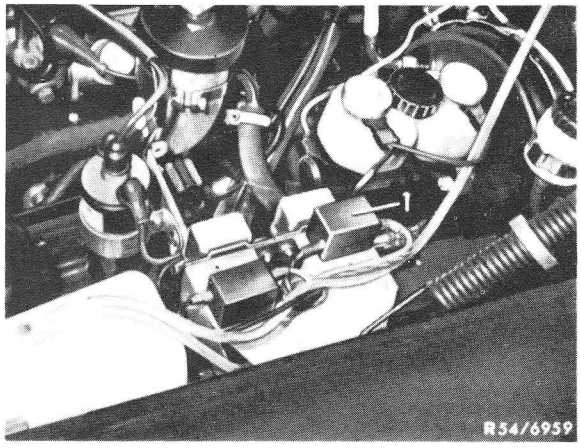
Mechanically and electronically controlled gasoline injection engines

- Fill at least 10 liters of fuel into empty fuel tank.
- Remove fuel filter of fuel pump and clean.
- Switch on ignition and check whether fuel pump is running (light humming sound). The fuel pump is installed in vehicle rear and accessible from below.

Note: On vehicles with electronically controlled gasoline injection engine the fuel pump will run for approx. 1 second after switching on the ignition.

- In the event of fuel pump failure, check fuses and cable connections.

On Model 250 CE the fuse of the fuel pump is located in main fusebox (fuse No. 4) or in a separate fusebox (1) in engine compartment.



1 Fuse for fuel pump on Model 250 CE, 1st version

Engine not firing – starter rotating

Diesel engines

Preglowing system not in order

Glow plug monitor does not light up

- Circuit interrupted by defective switch, preheating resistance, glow plug or by loose cable connections or bus bars.

Glow plug monitor lights up brightly already shortly after actuating switche

- Shunt in circuit by defective glow plug or bent bus bar.

Check preheating system:

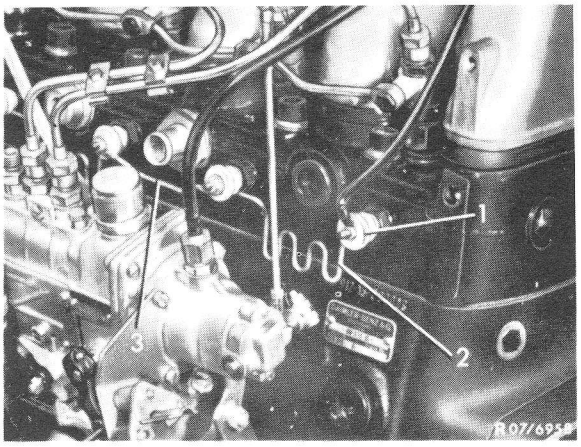
Switch on ignition.

Let another person hold heater starting switch in position "Preheating".

Test individual bus bars for voltage by means of an inspection lamp and ground connection.

If a bus bar shows no voltage, the circuit on the respective glow plug is interrupted or shunted.

Replace defective glow plug or bridge during starting as an emergency measure.



1 Glow plug
2 Bus bar with resistance
3 Bus bar without resistance

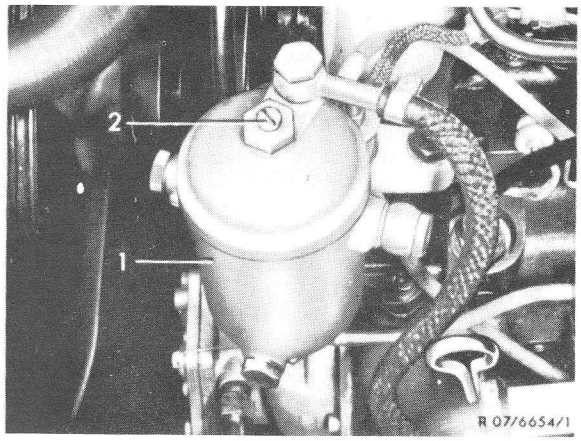
Fuel tank empty

- Fill in at least 10 liters of fuel.

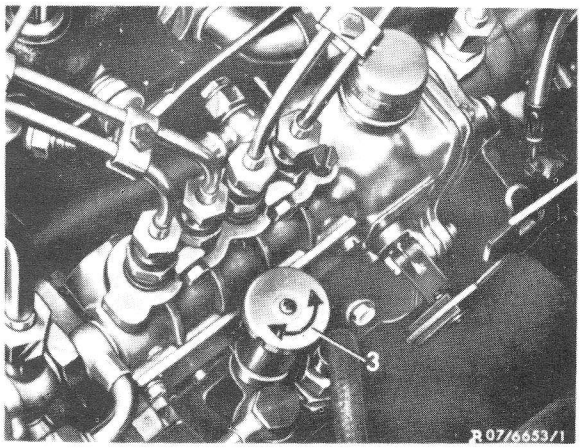
- For venting fuel system, loosen venting screw (2) on fuel main filter and on handle of manually operated delivery pump (3).

- Actuate manually operated delivery pump (moving handle up and down) to deliver fuel until no more bubbles are showing up on fuel main filter.

- Tighten venting screw and handle of manually operated delivery pump again.



1 Fuel main filter 2 Venting screw



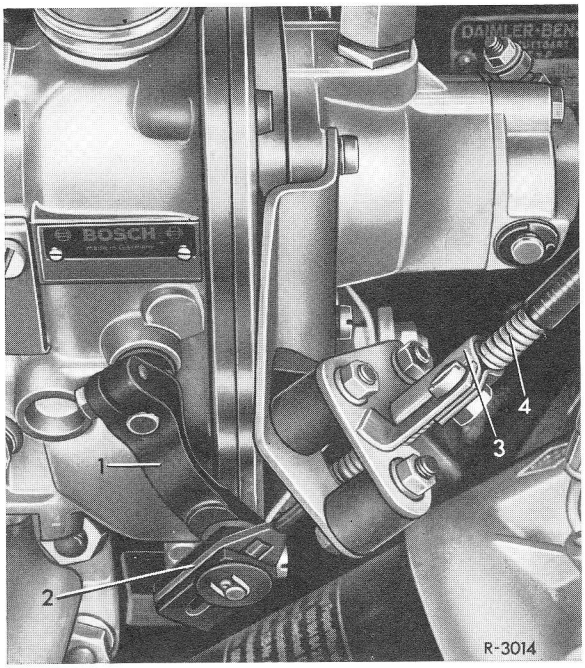
3 Manually operated delivery pump

Insufficient quantity of fuel during starting operation (particularly with cold engine)

- Starting and stopping control for injection pump wrongly adjusted, engine is not receiving the required quantity of starting fuel.

Check adjustment of starting and stopping control. In position "Drive" of the heater plug starting switch the bolt of the adjusting lever on the injection pump should have approx. 2 mm play in rear portion of oblong eye of cable control.

Adjust by loosening clip and shift cable control envelope. Make sure that the cable control eye and the adjusting lever are in alignment.



Heater plug starting switch and injection pump in position "Drive"

1 Adjusting lever
2 Eye of cable control with rubber piece
3 Holding bracket
4 Cable control envelope

Emergency measures

Supplementary battery

- During the starting operation an additional 12-Volt battery can be connected to support the vehicle battery (positive to positive, negative to negative).

Caution! Do not disconnect battery cable of vehicle with the engine running, since this will damage the alternator.

Tow-starting the vehicle

- If no second battery is available, the vehicle may be tow-started in 2nd gear in an emergency.

For vehicles with automatic transmission refer to owner's manual section "Tow-Starting the Vehicle".

Preheating the engine

- Drain coolant and preheat by filling hot coolant into engine.

Preventive measures

Heating the battery

- After stopping vehicle, remove battery and store in a heated room. This will assure full capacity for starting.

Larger inlet valve clearance

- Adjust valve clearance of inlet valves 0.05 mm larger than specified, for adjustment of valve clearance refer to item 753.

Better cold-flowing properties for diesel fuel

- At low ambient temperatures (below $-20^{\circ}C$) the flow capacity of the diesel fuel may become unsatisfactory due to clouding. This may result in delivery troubles and subsequent operational troubles. As a protection, use diesel fuels with lower cloud point (= temperature of beginning paraffin separation) sold during the winter. This winter diesel fuel can be used in most cases free of trouble up to approx. $-20^{\circ}C$ ambient temperature. Winter diesel fuel with less resistance to cold, summer diesel fuel, as well as during ambient temperatures below $-20^{\circ}C$, the diesel fuel must be given a certain quantity of standard carburetor fuel depending on the pertinent ambient temperature. This additional normal carburetor fuel should not exceed 30 %.

Preheating engine with electrical cooling water preheater

- In regions with very low ambient temperatures the coolant can be held warm or warmed up by means of an electric heater which is available as an accessory and is installed into the cooling system and connected to a suitable power source (mains connection). (For safety reasons, the heater and the electrical connection should meet the pertinent safety rules (in Germany VDE 0100 and 0720). MB Service Stations will provide the required information concerning suitable equipment tested by us and its installation.

Starter not rotating

All types

Battery discharged

- Check battery charge with voltmeter or hydrometer. Recharge or replace if insufficiently charged.

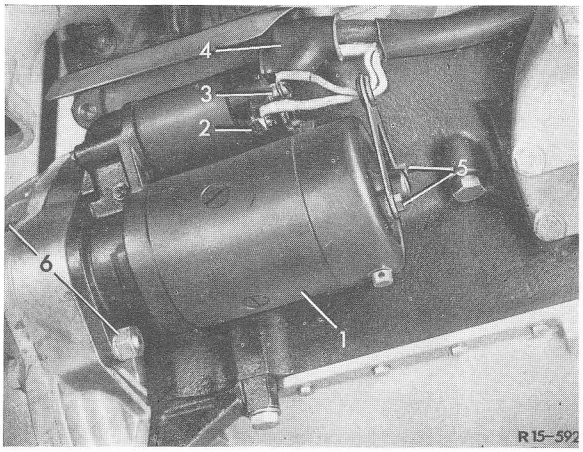
Battery charged – acid density: 1.28

Battery discharged – acid density: 1.12

Cable connections loose

- Check terminals on battery and on starter for tight seat.

- Check whether terminal 50 on starter is energized when the starter switch is actuated.



1 Starter
2 Terminal 50 (starter switch)
3 Terminal 16 (bridge series resistance – ignition coil
4 Terminal 30 (battery)

Starter switch or starter locking switch (on automatic transmissions) defective

- If starter terminal 50 is not energized, check ignition starting switch and on vehicles with automatic transmission in addition starter locking switch.

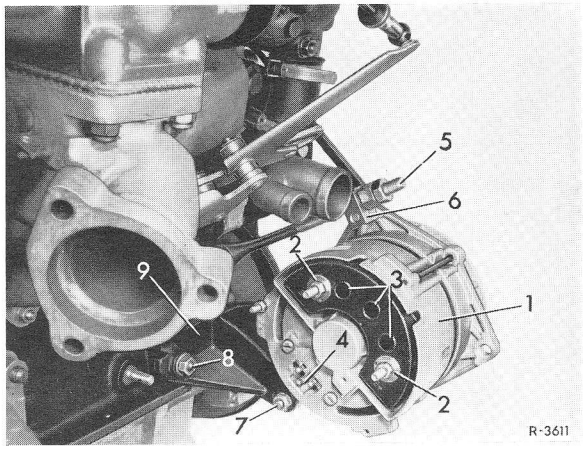
If a switch is defective, terminal 50 on starter (starter switch) and terminal 30 (battery) may be connected with a cable for an emergency starting operation.

Starter defective

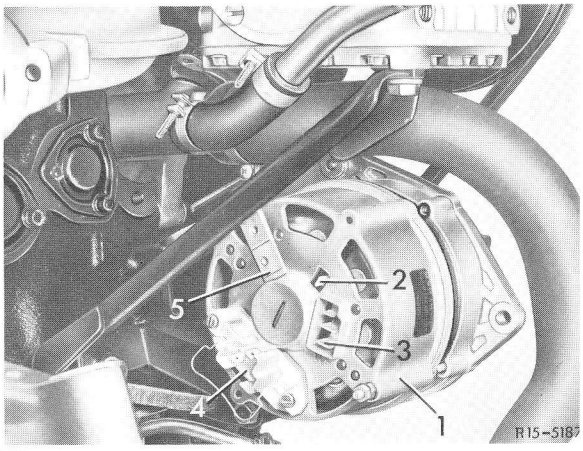
If starter does not rotate in spite of by-passing the starter switch, replace starter.

All types

V-belts of alternator loose or defective	• Check V-belts of alternator and tension, if required.
Cable connections or plug connections loose	• Pull plug connections from alternator and governor, clean, and plug-in again carefully. Tighten cable connections, if applicable.
Alternator or governor defective	• Check alternator and governor for function and exchange depending on findings.



1 35-Ampere alternator
2 Terminal B +
4 Plug connection to governor
5 Tensioning screw for V-belt
6 Clamping piece
7 Fastening screw



55-Ampere alternator
1 Alternator
2 Plug connection B+ for anti-interference capacitor
3 Plug connection B+ for charging lines
4 Plug connection to governor
5 Threads for anti-interference capacitor

Engine lubrication

All types

Oil pressure drops while idling	• At operating temperature the oil pressure may drop to 0.5 kp/cm^2 while idling, but should rise immediately upon acceleration.
Oil pressure drops below 0.5 kp/cm^2 while idling	• Check engine oil level and adjust, if required. Check oil viscosity (refer to owner's manual section "Fuels, Lubricants, Coolants"). If the engine oil level is normal between the min. and max. mark on oil dipstick, drive to next MB service station and have engine checked.
Oil pressure good in lower speed range but drops with increasing engine speed	• Check oil pan bottom for damage. If the oil pan is dented, the distance between the oil pan and the oil pump is too small. Replace oil pan bottom in an MB service station.
Oil pressure suddenly dropping	• Stop engine immediately. • Check engine oil level, which should at least be up to min. mark of oil dipstick. • If the oil level is inadequate, check oil level in engine, oil filter, oil cooler and lines incl. pressure gauge line for leaks. • If no leaks can be found, tow vehicle to next MB service station for additional check on vehicle.

All types

Cooling water temperature indicator moves close to red field

- The engine has an overpressure cooling system. The cooling water will start to boil when reaching 118°C (red mark on cooling water thermometer).
When driving uphill or bumper-to-bumper, when caught in a traffic tie up after a spell of fast highway driving or when driving in areas with high ambient temperatures, the cooling water temperature indicator may rise up to the red mark without a need for suspecting engine trouble. During extended tie ups, it will be of advantage to move the selector lever of vehicles with automatic transmission to position "N".

Cooling water temperature indicator moves into red field

- Permit engine to cool down below 90°C. Turn radiator cap to notch 1 and permit excess pressure to blow off.

Caution! Never open radiator cap fully immediately after loosening!
Immediate opening may cause injuries by the hot cooling water ejected under pressure!

Then turn cooling water cap to notch 2 and remove. Add cooling water up to approx. 1 cm above mark.

- Check engine, radiator, water hoses and lines for external water losses.

- Check tension of water pump or fan V-belt. Tighten belt, if required.

- Blow-out dirty radiator gills with compressed air from engine end with the engine stopped.

- On vehicles with electric supplementary fan check whether supplementary fan connects at approx. 100°C cooling water temperature. On vehicles **without** protective grille on supplementary fan, a checkup is possible only with the engine hood closed (safety switch).

Check electric connections and fuse for supplementary fan.

Additional checkups in MB service station:

- Engine tuning

- On vehicles with visco fan, check function of fan coupling.

- Check venting line between water pump and cylinder head for free passage.

- Check water pump for function.

- Check cooling water thermostat element or replace.

- Check cooling water tele-thermometer.

- Clean cooling system.

Level control system leaks
Models 107 114 115

- Permissible oil consumption for driving 5,000 km should be 200 cc.

In the event of major oil losses in the system, never drive with the oil supply tank empty, since a stuck oil pressure pump will damage the chain drive of the engine.

If the vehicle must be driven in spite of an empty oil supply tank, make oil pressure pump inoperative by removing the drive dog. In such a case, the hydraulic struts will act as shock absorbers **only,** as long as the basic pressure between level control and hydraulic struts is maintained.

Air suspension system leaks
Model 109

Warning lamp lights up

- If prior to moving off the white warning lamp in position "N" = Normal level" lights up, it is an indication that the supply pressure has dropped below the minimum pressure.

- If the lamp lights up only occasionally, its cause is generally a leak on the check valve in the air supply tank.

- If the warning lamp burns temporarily during slow city driving, this is of no significance provided the vehicle level remains normal.

Vehicle level too low

- If the level is too low while driving in spite of the warning lamp not lighting up, the cause may be a defective level control valve or the valve unit (only when level is too low on front axle).

Caution! Drive to next MB service station.

Vehicle level drops only temporarily with vehicle stopped (preferably after city driving)

- Leaking check valve in air supply tank and simultaneous failure of check valve in one level control valve.

In such a case the vehicle can be driven on after attaining the normal level by running the engine and filling the system. A failing check valve in a level control valve has no influence on the function of the level control of the pertinent valve.

- Replace check valve in air supply tank.

Réd brake light control lamp lights up while driving	• Check whether pedal of parking brake returns to its end position and actuates control switch. • Fluid level in refill tank of brake system below minimum mark as result of leak. Add brake fluid and drive immediately to next service station.

Power steering

All types

Power steering moving hard	● Check V-belt of pressure oil pump for condition and tension. ● Check oil level in supply tank. When oil losses are high, drive to next MB-Service Station immediately. **Caution!** The pressure oil pump should never be operated without oil. ● Volume control valve sticking. Replace pressure oil pump.
Whistling noise at full steering lock	● V-belt of pressure oil pump slips. Tension V-belt.

Preparations for making adjustments

- For adjusting the headlights, the vehicle should be placed on level ground. Even small uneven spots on vehicle base may result in wrong adjustment.
- The specified air pressure on all tires should be maintained.
- The vehicle should be loaded according to data in Adjusting Table and should then be driven slowly to the adjusting area so that the spring adjustment is not changed when the brakes are pulled.
- On vehicles with level control on rear axle, run engine for approx. 30 seconds at medium speed upon loading and then permit vehicle to come slowly to a stop.
- Adjust headlights individually. For this purpose, cover all other headlights. Whenever possible, make adjustments in a closed room which is not too brightly lighted, since the accuracy of the adjustments can be influenced by wind (moving the test surface) and by other light sources. Whenever possible, the headlamps should be adjusted by means of a headlight adjusting device. Be sure to follow the operating instructions of the pertinent unit. If no headlamp adjusting device is available, make adjustments with the assistance of an adjustable, level testing surface.

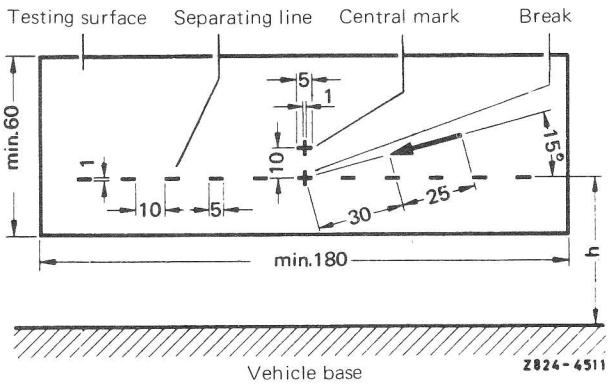


Fig. 1 Testing surface (dimensions in cm)

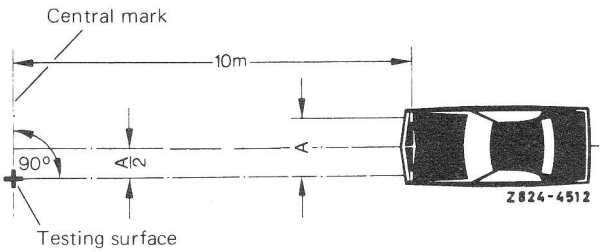


Fig. 2 Location of vehicle in relation to testing surface

Headlight adjustment

All types

In an emergency, the test surface can be drawn on a wall. The surface should be bright and provided with a central mark and a separating line (Fig. 1) arranged vertically to the longitudinal center line of the vehicle. For using the adjusting dimensions according to the adjusting table the distance between the test surface and the headlights to be adjusted should be 10 m.

In the event of an increased tilt of the light beam, for example on foglights, the distance should be 5 m; the specified adjusting dimensions are then halved.

The central mark of the test surface should be in the plane parallel to the longitudinal center line of the vehicle and running through the center of the headlight to be adjusted.

For each headlight to be adjusted the separating line must be adjusted parallel to the vehicle base to height h, where

H = Height of center of headlight above vehicle base in cm,

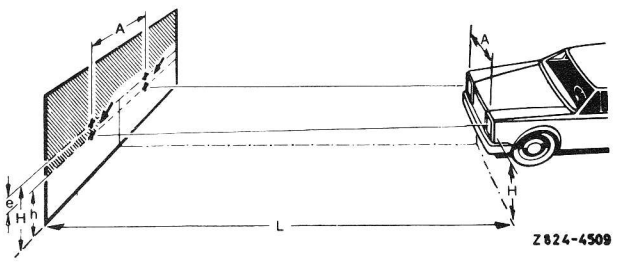
h = Height of separating line of test surface above vehicle base in cm (Fig. 1),

e = Adjusting dimension in cm (refer to adjusting table)

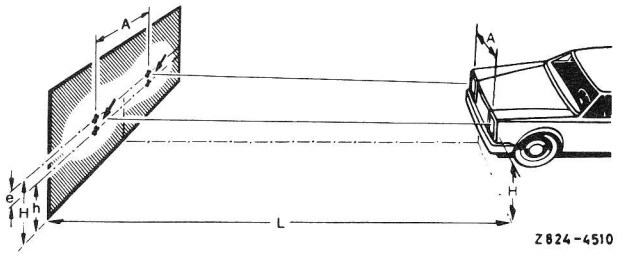
e = H − h

Main headlights

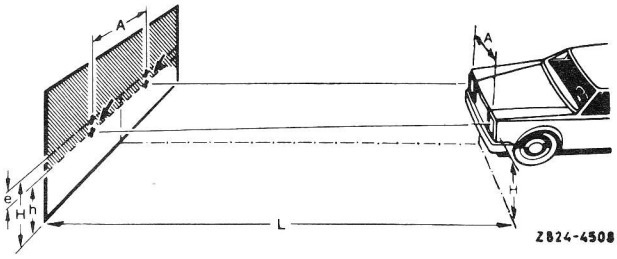
The main headlights are adjusted by adjusting the asymmetric dimmer light. The light-dark boundary should touch the separating line at left of center. The point of intersection between the lefthand (horizontal, if possible) and the righthand rising portion of the light-dark boundary should be on the vertical line through the central mark. For easier determination of the point of intersection the lefthand headlight half can be covered alternately several times and released again.



The light beam center of the high beam should be on the center mark. On headlights with common adjustability for the high beam and the low beam, deviations of 20 cm each to the right or to the left and of 15 cm in upward or 10 cm in downward direction are permitted.



For fog lights the highest point of the light-dark boundary should touch the separating line and should run as much as possible horizontally across the minimum width of the testing surface. In lateral direction, the fog lights are adjusted in such a manner that the light distribution is as much as possible symmetrical to the vertical line through the central mark.



Adjusting Table (Dimensions in cm for testing surface at a distance of 10 m)

Type of vehicle	Load vehicles for adjustments as follows	Adjusting dimension "e" in cm	
		Main headlights	Fog lights
Passenger cars in which the upper reflector rim of the headlights is not more than 135 cm above the vehicle base.	With 1 person or 70 kg on rear seat of otherwise unloaded vehicle (empty or unladen weight*). Passenger cars without rear seat are loaded with 1 person or 70 kg on driver's seat. Occasional seats are not considered to be rear seats.	10	20

*) The empty or unladen weight is the weight of the vehicle ready for operation with completely filled, built-in fuel tanks including the weight of all the equipment carried along while driving (for example spare wheels and tires, spare parts, tools, vehicle jack, fire extinguisher).

The location and the access of the adjusting screws on the headlights are shown in the operating instructions of the individual vehicle models.