

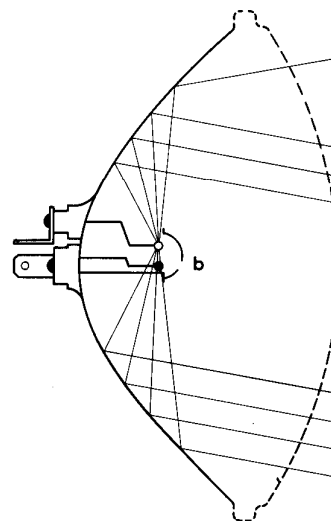
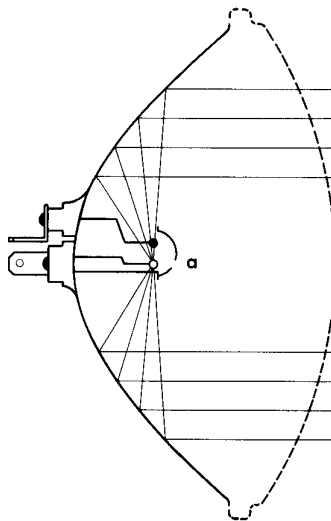
Sealed Beam Headlights

The reflector, filament, and lens are incorporated in a single unit.

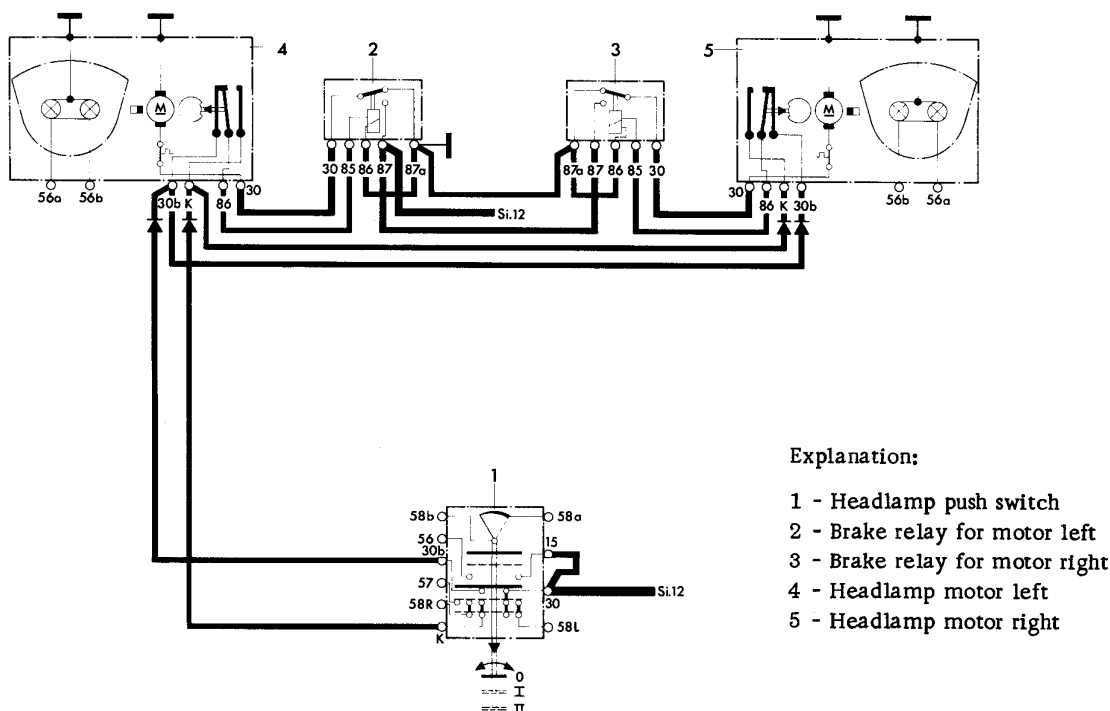
In the low beam, the filament is located above and to the right of the focal point. The reflecting zone located behind the focal plane directs the light upward. For this reason, only flat reflectors of greater focal length can be utilized. The sideward positioning of the filament has the effect of directing the light rays toward the right side of the road to increase its illumination.

a = High beam

b = Low beam



Headlamp Motor Circuit



Function

The headlamp push switch is provided with an additional changeover contact (terminals 30-30b and 30-K). When the headlamp switch is actuated (position I parking light or position II main beam) its terminal K is connected to terminal 30 and terminal K of both motors is therefore connected to positive voltage. The two slide contacts K and 86 of the motors then permit the two brake relays to attract.

Their contacts 87 and 30 will start the motors. They will run for half a rotation and will thereby open the headlamp flaps. The switch segments installed in the motors will thereby arrive at a position in which the slide contacts 86 can no longer receive voltage from contact K and the relays will drop out. The relays will then close their normally inoperative contacts 30-87 a and will thereby connect terminal 30 of the motors to earth. The motor armatures are now short-circuited. As long as the motor armatures are still in rotation, their short-circuited windings will induce a current, with its magnetic field opposing the field of the permanent magnet (field magnet of motor). This will result in a braking effect which will cause the armatures to stop immediately. When the headlamps are switched off, terminal 30b of the headlamp switch receives a positive voltage. As a result, the terminals 30b of the headlamp motors are also energized. Since the motors have rotated by half a revolution from their inoperative position into the position, in which the headlamps are exposed, the switch segment of the motors is in a position in which the sliding contacts 30b and 86 are bridged. The brake relays can now attract and the motors are energized for running half a revolution.

The switch segment will then be again in its inoperative position, this means, that there is no longer a connection between the slide contacts 30b and 86. The brake relays will drop out and will brake the motors by short-circuiting their armature windings as already explained above.

H 4 - Headlamps

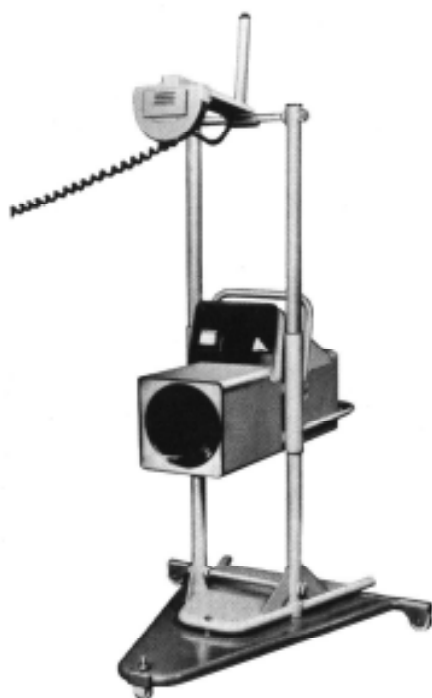
Beginning with 1973 models, Type 914 vehicles are optionally equipped with the halogen H4 headlamps, providing that regulations do not prohibit their use in the given country of destination.

The H4 lamp is designed in the conventional way, that is, both filaments (high and low beam) are accommodated in a common bulb. The power rating is 60 watts for the high beam and 55 watts for the low beam. Halogen lamps have approximately twice the light density of the conventional automobile bulbs. This provides a much better illumination of the roadway, although the possibility of blinding oncoming vehicles is also considerably greater.

To keep the blinding aspect at a minimum, H4 headlamps must be equipped with more exactly designed lenses and reflectors. It is also not permissible to install the H4 bulbs into headlamps of conventional design. For this reason, the base of the H4 bulb has been so designed, that it can be used only in the H4 headlamp units.

Subsequent installation of the H4 headlamps in Type 914 and 914/6 vehicles is possible, providing that instructions given on page 3.2-2/3 are followed.

Conversion is permissible in pairs only.



Nr.	Description	Special Tool No	Remarks
1	Aiming device		
2	Multiple cross wrench	VW 674/1	Local purchase item

Retractable Headlights

Removing

- 1 - Turn on the lights so that the headlights pop up.
- 2 - Disconnect battery ground strap.
- 3 - Remove three retaining screws from the fiberglass shroud and lower shroud.
- 4 - Remove the three lamp retaining screws (see arrows). Do not remove the two adjusting screws. Remove plug and take out lamp.

Installing

Install in reverse order.



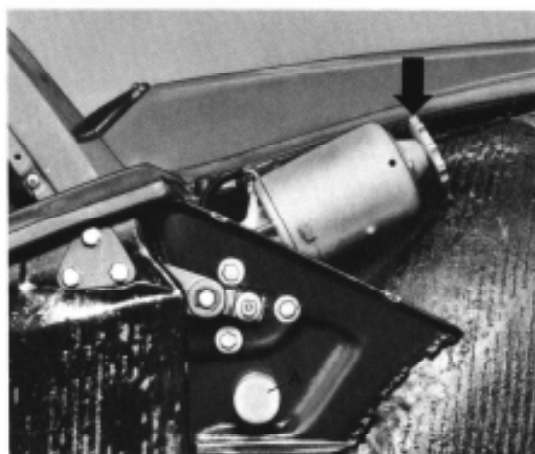
Retractable Headlight Motor

Removing

- 1 - Raise headlights by hand, using wheel in tool kit.
- 2 - Remove actuating lever from motor. Use a puller if necessary.
- 3 - Remove three headlight motor retaining screws and withdraw motor.
- 4 - Remove ground screw.
- 5 - Headlight motor wiring color code: red to red, blue to grey, black to green.

Note

The headlight motor cannot be repaired.



Installing

The headlight motor must be brought into the headlight raised position before installation.

Connect the brown wire (with connector) to ground. Connect hot (positive wire) to the red and blue wires at the same time. The motor will run to the "raised" position and stay in that position.

If the motor should not run, determine if it already was in the "raised" position. This can be done by connecting a hot wire to the black and red wires at the same time. This causes the motor to run to the "lower" position; reconnect wires to bring the motor back to the "raised" position.

The relay switch, Part Number 901.615.109.01, must be in its socket during this procedure. See illustration for position of the actuating lever.



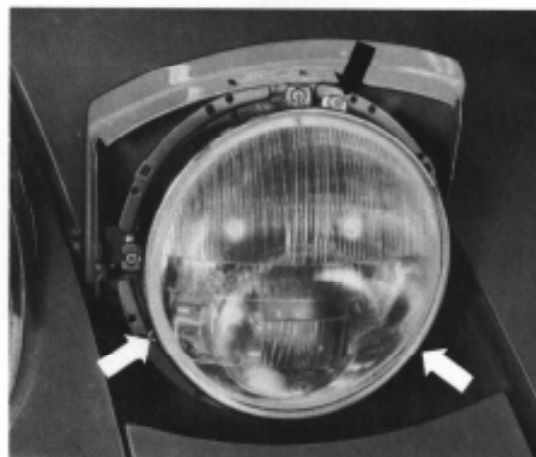
Retractable Headlamps

Removal

- 1 - Running retractable headlamps up by actuating the headlamp switch.
- 2 - Disconnect battery earth connection cable.
- 3 - Loosen three screws of front panelling (plastics) and remove panelling.
- 4 - Loosen two screws of rear panelling and remove.
- 5 - Remove rubber cover on bulb socket and pull lines from contacts.
- 6 - Loosen three screws of headlamp (arrows) - not the two adjusting screws - and then remove headlamp.

Installation

Proceed vice versa for installation. Connect lines according to wiring diagram.



Retractable Headlamp Motor

Removal

- 1 - Run retractable headlamp completely up by means of hand wheel (arrow) (service tools).
- 2 - Pull crank from retractable headlamp motor, use Kuko puller, if required.
- 3 - Unscrew three fastening screws for headlamp motor and remove headlamp.
- 4 - Loosen earth connection screw.
- 5 - Connection of headlamp cables: red to red, blue to grey, black to green.

The headlamp motor cannot be repaired.



Installation

Put motor into "up" position of headlamps prior to installation - proceed as follows: Connect minus to brown line (cable shoe), plus simultaneously to red and to blue line. Motor will run into its end position and remain there automatically. If the motor does not start, see if it has been in its end position already. This is done by connecting plus to both, the black and the red line, which will cause the motor to run into the position "down". Then let engine run again into position "up". For this purpose, the standard relay, spare part No. 901 615 109 01, must be inserted into the relay holding bracket. For position of crank refer to illustration.

H4 - Headlamps

This headlamp does not differ from the formerly used type in outside dimensions, mounting, or adjustment specifications. The headlamps should always be adjusted with greatest care and with the aid of an optical headlamp adjuster.



Replacing H4 Headlamp Bulb

- 1 - Remove headlamp
- 2 - Withdraw 3-pole connector
- 3 - Push dust boot back
- 4 - Disengage retaining springs and take the bulb out.

Make sure that the bulb is properly seated upon reassembly. The glass sphere must be completely clean and free of grease; always hold the bulb by its base only.

Note the following points when converting vehicles to the H4 headlamp system:

The formerly used black rubber dust boot must be replaced with a red one (better heat resistance). Also, only the polyamide-colored 3-pole connector may be used. The formerly used, transparent connector must be replaced.



Halogen Driving Lamps

Removal

- 1 - Remove front bumper and grill (see Group 8).
- 2 - Remove lamp retaining screw and take lamp out
- 3 - Remove reflector retaining screw. Withdraw reflector from lamp housing and detach wires.

Installation

Install in reversed order of the above, subsequently adjusting the lamps (see page 3.2-10/1).

Removing and Installing Halogen Driving Lamp Bulbs

- 1 - Remove reflector retaining screw (accessible through depression in bumper, below lamp) and withdraw reflector from lamp.
- 2 - Unsnap bulb retainer and take bulb out.

When installing the bulb make sure that the locating pins come to rest in their seats in the bulb socket.





AUXILIARY DRIVING LIGHTS OR FOG LIGHTS - 1975 MODELS

Removing and Installing

- 1 - Remove bumper (see Group 8).
- 2 - Remove lights from bumper.



Loosen mounting screw at base of light to aim lights. It is accessible through the square opening underneath the bumper

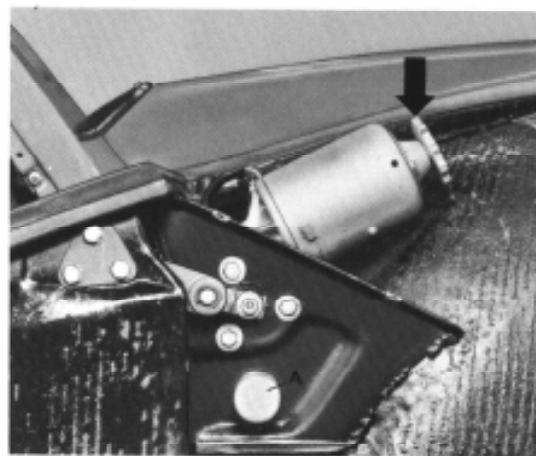
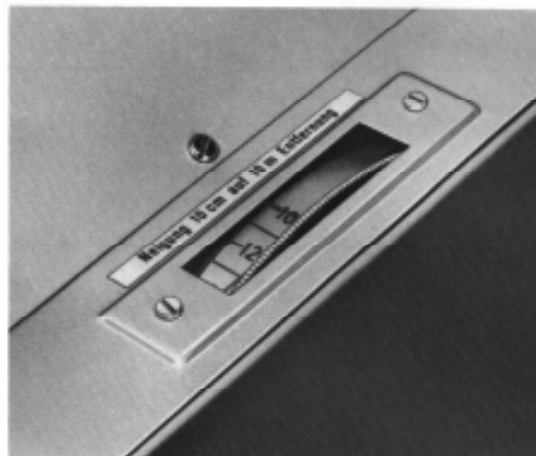
Aiming Headlamps with Headlamp Adjuster (Rail Type)

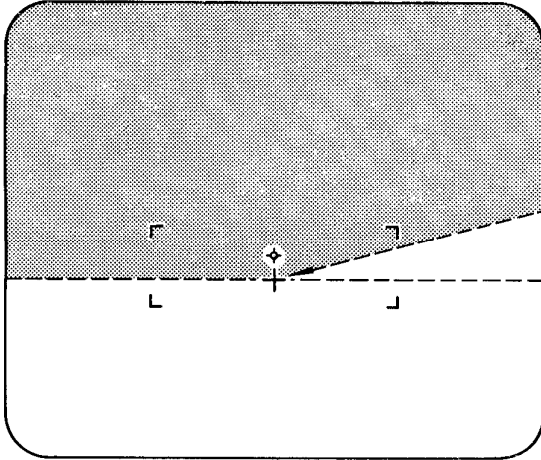
When using headlamp adjusters of other makes, the operating instructions of the manufacturer must be observed. Headlamp adjustments obtained with such equipment must meet legal regulations.

Headlamps with Asymmetric Dimmer:

Complete adjusting steps in the sequence below:

- 1 - Position vehicle as vertically as possible in relation to adjuster.
- 2 - Check specified tire pressure and correct, if required.
- 3 - Load vehicle with one person or 70 kg (154 lb) on driver's seat.
- 4 - Push vehicle back and forth several feet so that suspension conforms to load conditions.
- 5 - Move adjuster in front of the headlamps and set distance between the focusing lens in the optics carrier and the headlamp to approx. 250 mm (10 in.).
- 6 - Move adjuster in front of the vehicle center and switch on light beam projector.
- 7 - Direct light beam left and right to one prominent point of vehicle each (for example upper edges of retractable headlamps). The aiming is done by loosening the pedal lever on the column guide.
- 8 - Move adjuster in front of headlamp and align to headlamp center. The deviation of the optical axis (headlamp - optical carrier) may amount to max. 30 mm (1.18 in.) vertically or laterally. Set inclination of headlamp on scale of knurled disk to 10.
- 9 - Adjust headlamps with dimmer switched on. Corrections with high beam engaged are not permitted. Remove front plastic cover on headlamp.





A - Vertical Adjustment

Adjust headlamps vertically in such a manner that the border line between light and dark runs at the left of the adjusting cross horizontally on the adjusting line.

B - Lateral Adjustment

Adjust headlamps laterally in such a manner that the border line between light and dark runs along the sloping line (15°) and the break in the border between bright and dark is accurately in the center of the focusing cross.

Note:

With the border line between bright and dark of the dimmer accurately positioned, the center of the high beam should be on the focusing cross. The permissible deviation is 10 mm (0.4 in.) to the right and left, 7 mm (0.28 in.) toward the top and 5 mm (0.2 in.) to the bottom.

Halogen High Beam Headlamps

The high beam is adjusted with the retractable headlamps covered. In addition, the general instructions on page 9 3.2-10/1 apply.

Align adjuster to center of high beam. Set inclination scale to 10. The center line of the high beam should be against the upper focusing cross, that is, when the luxmeter indicates max. light intensity. The high beam radiates parallel to the lane.

Halogen headlamps can be adjusted vertically only, not laterally.

Measuring the Light Intensity

The adjuster is provided with a luxmeter to measure the light intensity. Measurements in lux light units must be made immediately after inspecting and aiming the headlamps, because the headlamp adjuster should not be readjusted for that purpose.

Light Intensity for Dimmer

- 1 - Push button on luxmeter. The dimmer range of the measuring unit is switched on. The needle of the luxmeter should remain in the green range. If it is in the red range of the scale, the light intensity is above the permissible rating for the dimmer.



- | | |
|-----------------|-------------------------|
| 1 - Push button | 3 - Scale for high beam |
| 2 - Luxmeter | 4 - Scale for dimmer |

Light Intensity for High Beam

(in Retracting Headlamps and in Halogen Headlamps)

- 1 - Adjust headlamp adjuster in such a manner that the center of the light beam strikes exactly against the photo-electric diode of the luxmeter (directly behind the upper focusing cross of the measuring screen). The unit is correctly adjusted when the luxmeter indicates the max. light intensity.
- 2 - The headlamps are in order when the needle of the luxmeter is in the green scale range when measuring.

When the green scale range is not attained, check headlamp system.

Faults in Headlamp System

a - Excessive Voltage Drop

If in spite of accurate aiming of the headlights, the light effect is insufficient, check the voltage on the headlamp connections. The reason for weak headlamps is often an excessive voltage drop caused by loose line connections, defective switch contacts or bad earth connection. The fusebox can also be the cause of excessive voltage drop as a result of corroding transition points between the fuse and the holder. At a voltage drop of only 10 % the light intensity will drop by approx. 30 %. The voltage drop in the headlamp lines should generally not exceed 0,6 Volt.

b - Bulb not in Order

Another cause of unsatisfactory light may be the position of the filament in the bulb. The bulb or the socket can also be badly inserted.

Aiming Headlamps without Adjuster

The headlamps can be aimed by using an adjustable, vertical surface. The test surface should be light in colour and must be provided with markings for the centers of the headlamps and a marking for the border line between light and dark.

Headlamps with Asymmetric Dimmer (in Retractable Headlamps)

Observe the following instructions prior to and while completing adjustments:

- 1 - Position vehicle 5 m (16.5 ft.) from test surface on level ground.
- 2 - The test surface should be vertical in relation to the direction of driving and the separating line should be parallel to the base of the vehicle.
- 3 - The tires should be inflated to the specified pressure.
- 4 - Move vehicle several feet back and forth to settle suspension.
- 5 - Check headlamps individually. Always cover the other.
- 6 - Aim headlamps vertically and laterally with the dimmer switched on.
- 7 - Load vehicle with one person or 70 kg (155 lb.) on driver's seat.

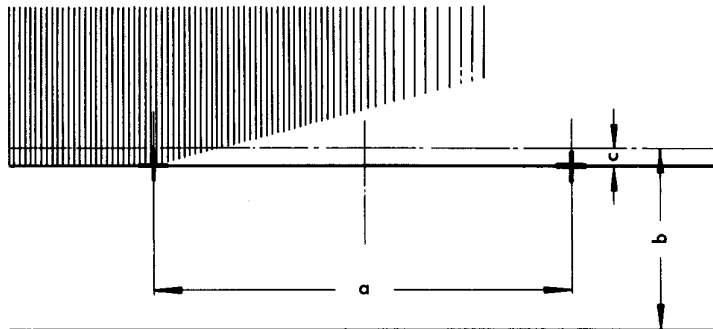
Aim headlamps with the dimmer installed.

a - Vertical Adjustment

Aim headlamps vertically in such a manner that the border line between light and dark to the left of the focusing cross proceeds horizontally along adjusting line.

b - Lateral Adjustment

Aim headlamps laterally in such a manner that the border line between light and dark proceeds alongside the sloping line (15°) and the break of the border line between light and dark is accurately in the center of the focusing cross.



a - Distance from center to center of retractable headlamps = 1,070 mm (42 in.).

b - Height of headlamp center from ground (separately determined for each vehicle).

c - 1 % of distance, wall to vehicle, at 5 m (16.5 ft.) distance = 5 cm (2 in.).

Halogen High Beam Headlamps

The high beam is adjusted with the retractable headlamps covered. In addition, the general instructions 9 3.2-13/1 apply.

When adjusting the high beam, dimension c of the drawing on page 9 3.2-13/1 is not applicable. The center of the high beam is at the intersection of the height of the high beam center from the ground, dimension b (newly determined in each case) and the distance of the two high beam headlamps - 1130 mm (44.5 in.).

Note:

The high beam headlamps are adjustable only in height, but not laterally. Loosen fastening screw of headlamps for making adjustments.