82-4011 Testing headlamp range control (except USA)

Preceding work:
Checking basic setting of headlamps (82-1130).

Operation no. of operation texts and work units or standard texts and flat rates:
82-4011

A. Checking adjustment range

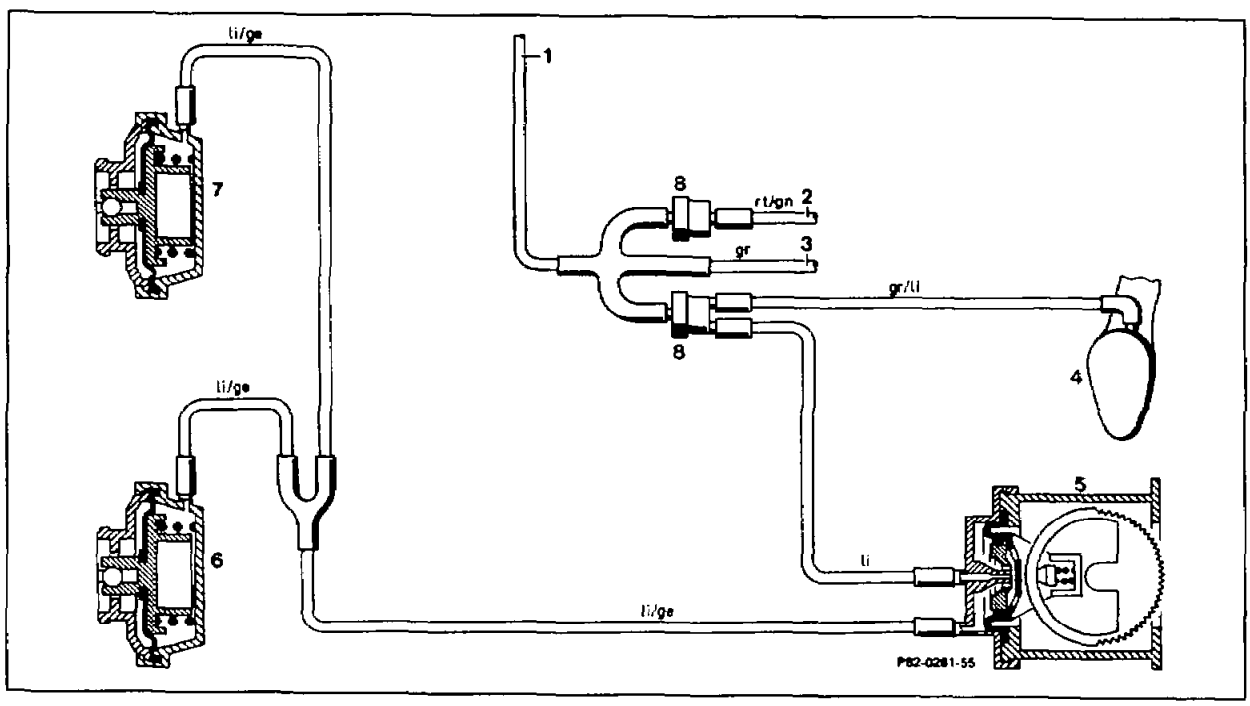
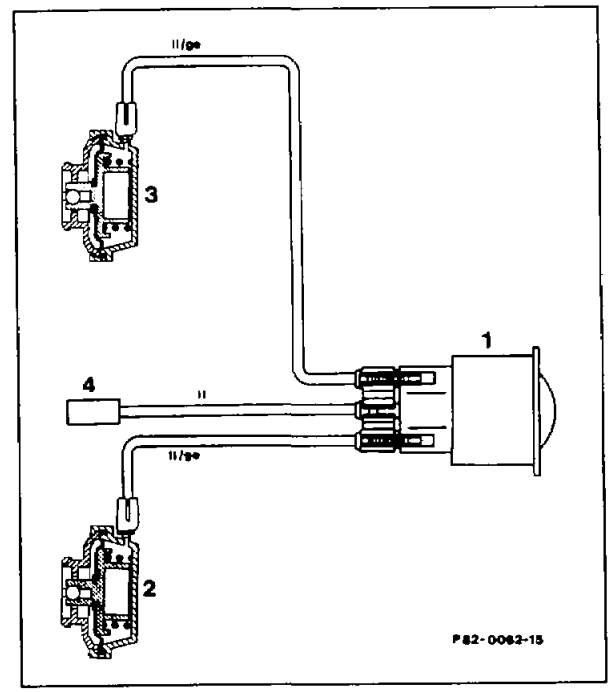


Diagram of vacuum-controlled headlamp range adjustment up to 08/89

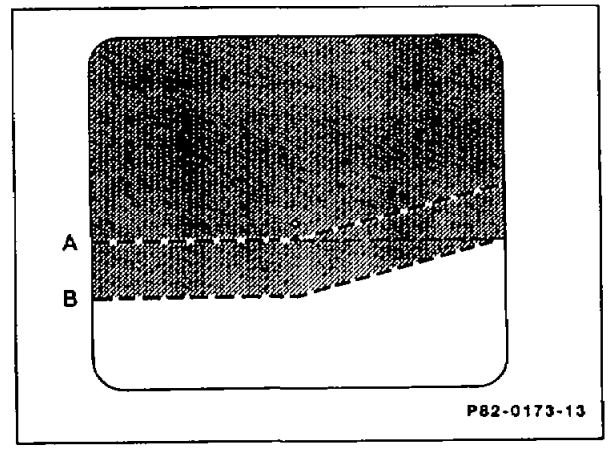
1	Vacuum connection at engine	5	Regulating switch
2	Automatic heater control	6	Left headlamp positioning element
3	Economy	7	Right headlamp positioning element
4	Vacuum reservoir	8	Check valve

Diagram of vacuum-controlled headlamp range adjustment as of 09/89.



1 Regulating switch
2 Left headlamp adjusting element
3 Right headlamp adjusting element
4 Vacuum connection at engine (intake manifold)

Engine	run.
Regulating switch	move from position 0 to position 3; on vehicles with self-levelling suspension from position 1 Λ to position 2.
Bright/dark cutoff line of dipped beam	shifts from "A" to "B".



Knurled disc or measuring screen on headlamp beam adjuster	alter until adjusting line is in position "B".
Take reading of value on adjusting scale of headlamp beam adjuster	specification between A and B marking: 33 to 48 cm.
If these values are not reached	check vacuum, tester for vacuum 201 589 13 21 00.

Vacuum levels at headlamps or outlet of regulating switch

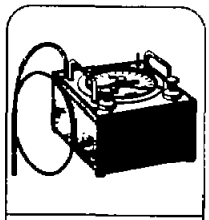
Position of regulating switch	Vacuum in mbar
without self-levelling suspension	**without** self-levelling suspension
0	400 ± 30
1	290 ± 30
2	200 ± 30
3	50 ± 30
with self-levelling suspension	**with** self-levelling suspension
1 Λ	400 ± 30
0	290 ± 30
1 V	200 ± 30
2	50 ± 30

If these values are not reached . . . . . check vacuum system for leaks.

Note as of 09.89
If the connecting bush is leaking, this can be replaced by an adapter.
To do this, shorten pneumatic line by about 50 mm. Insert adapter in place of the cutoff connection bush and fit on with hose connector (approx. 40 mm long).

If these values are reached . . . . . check ease of movement of reflectors and stroke of adjusting elements (steps 1–6).

Special tool



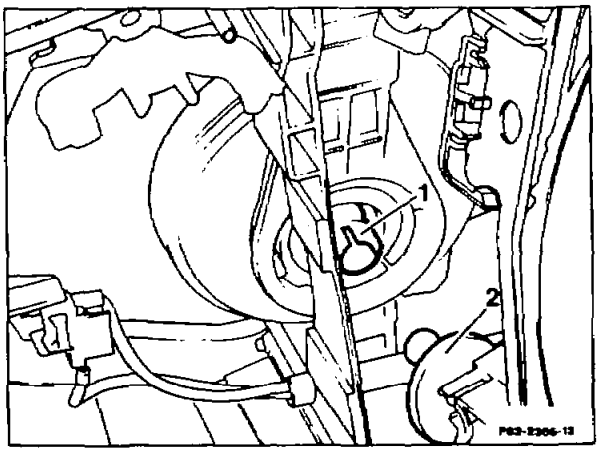
201 589 13 21 00
00 42 80

Checking ease of movement of reflector

1 Remove cover of headlamp unit and detach adjusting element from bayonet lock by turning 45° to the left.

2 Press red locking piece (2) off adjusting element (1) and pull adjusting element off the ball head of the tie rod.

3 Move reflector by hand and check whether it moves easily.



Checking stroke of adjusting element

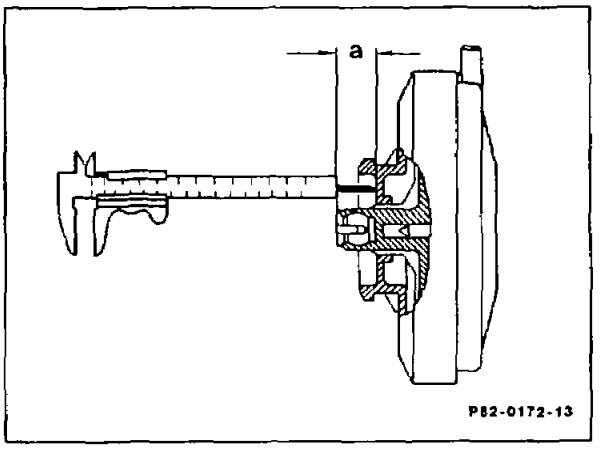
4 Connect removed adjusting element to control line.

5 Build up vacuum of approx. 0.4 bar and move regulating switch from position 0 to position 3; on models with self-levelling suspension from position 1 Λ to position 2.

6 Measure the stroke (a) of the piston at the adjusting element. The stroke must be 3.2 ± 0.2 mm. If this value is not achieved, replace adjusting element.

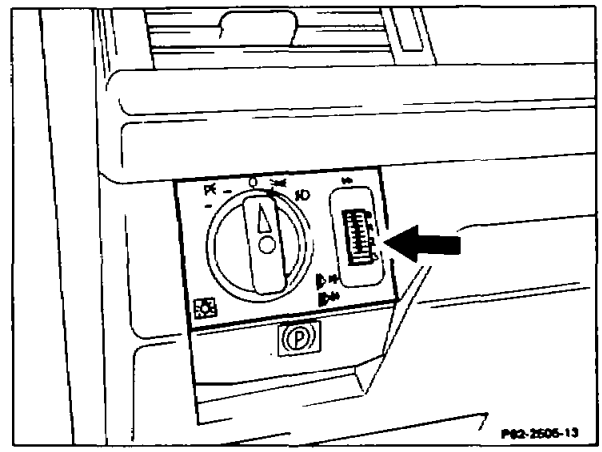
Note

When installing adjusting element, do not forget to press on red locking piece again.

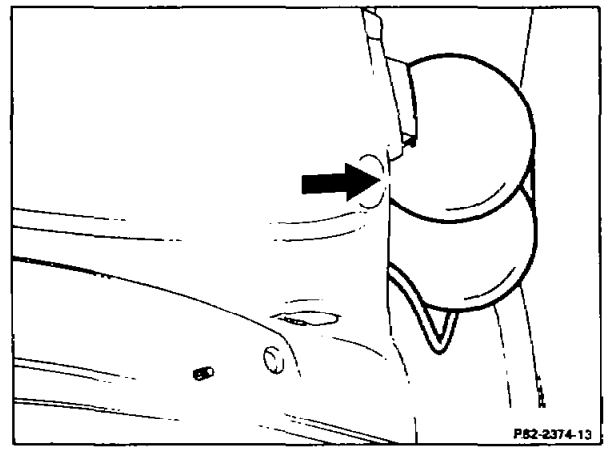


B. Function

The range of the headlamp can be varied with the regulating switch (arrow). The headlamp range is adjusted by means of vacuum-operated adjusting elements.

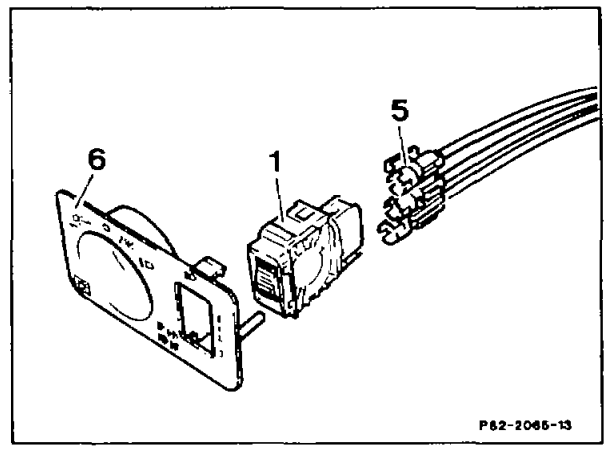


On cars with gasoline engines, the vacuum is tapped at the intake manifold and passed through a check valve to the regulating switch. A reservoir is necessary in order to assure an adequate vacuum supply over the entire engine speed range. The reservoir is connected in parallel to the regulating switch and housed in the front left wheelhouse behind the fire wall.

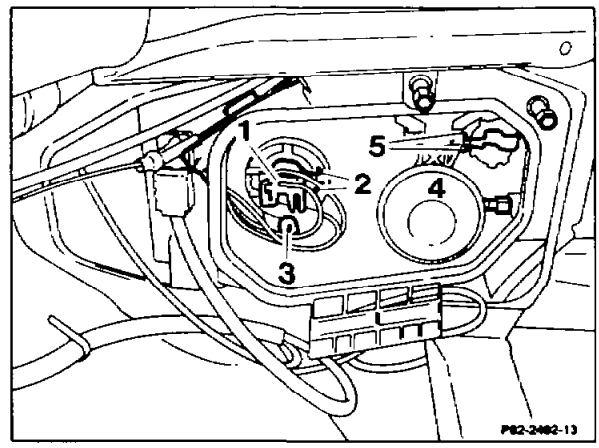


Note

As of 09/89 the vacuum lines are plugged in at the regulating switch (1) with quick connectors. A shutoff valve integrated in the regulating switch closes if there is a drop in the vacuum and prevents the reflectors being moved out of position. The regulating switch (1) is supplied with vacuum directly from the intake manifold. The reservoir and the check valve are no longer fitted.

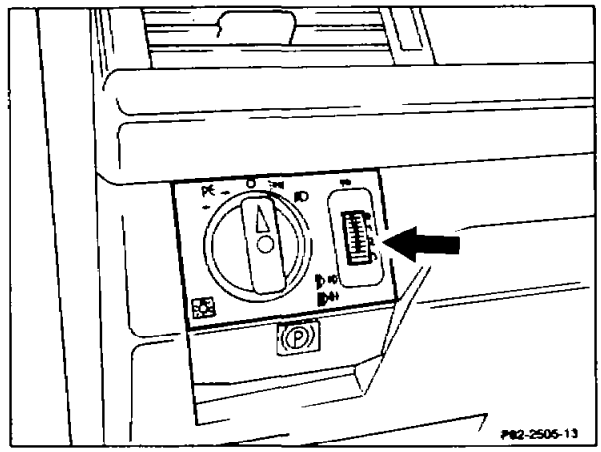


An adjusting element (4) with a maximum stroke of approx. 3 mm is located at each headlamp unit. The adjusting element is linked by means of a tie rod to the pivot-mounted reflector.



Models without self-levelling suspension

The regulating switch has the regulating stages 1, 2 and 3 in addition to the basic position "0". Maximum vacuum (approx. 0.4 bar) exists at the adjusting elements in the basic position and maintains the reflector in its basic setting. If the regulating switch is turned to positions 1, 2 and 3, a lower vacuum exists at the adjusting elements (table), the stroke is increased and the reflectors are tilted down out of the basic position by the following values:



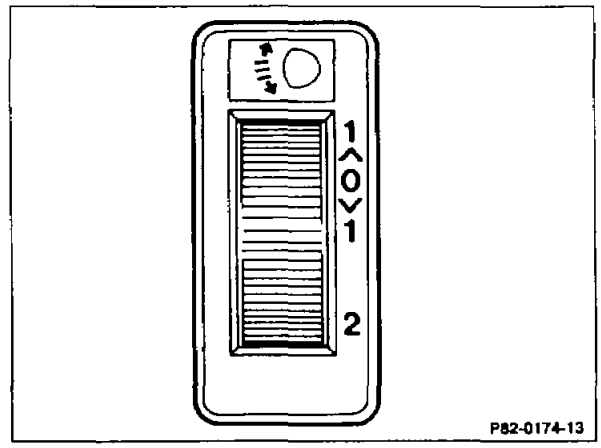
Position of regulating switch	Adjustment at positioning element in mm	Vacuum in mbar
1	0.95	290
2	1.70	200
3	3.00	50

Setting according to vehicle load

Position of regulating switch	Load of car
0	Front seats or seat occupied
1	Front and rear seats occupied
2	Front and rear seats occupied and load in trunk up to permissible rear axle load or
3	front seats occupied and max. load in trunk (max. permissible 100 kg) and, as need be, when towing a trailer.

Models with self-levelling suspension

The regulating switch has the positions 1 Λ (higher), 1 V (lower) and 2, in addition to the basic setting "0". In position 1 Λ the maximum pressure (approx. 0.4 bar) exists at the positioning elements and maintains the reflector in its position. In the other regulating stages a lower vacuum exists at the positioning elements (table), the stroke is greater and the reflectors are tilted down out of the basic position by the following values:



Position of regulating switch	Adjustment at positioning element in mm	Vacuum in mbar
1 Λ	0.0	0.40
0	0.95	0.29
1 V	1.70	0.20
2	3.00	0.05

Setting according to vehicle load

Position of regulating switch	Load of car
1 Λ	Rear seats occupied
0	Front seat or rear seats occupied
1 V	Front and rear seats occupied and load in trunk up to permissible rear axle load
	or
2	front seats occupied and max. load in trunk (max. permissible 100 kg), as need be when towing a trailer