

At the second maintenance job,
then every 15 000 km / 10 000 miles

Diesel-Engine OM 615, 616

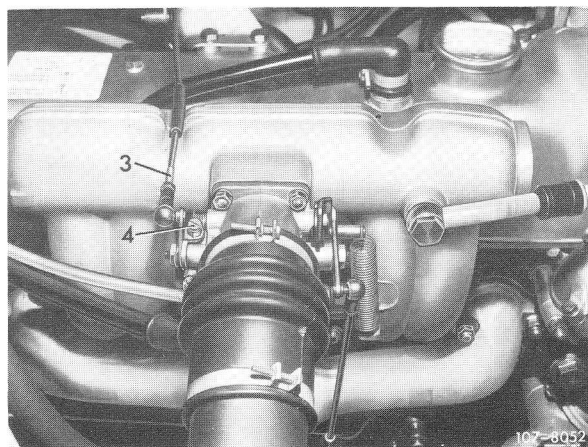
Test values

Idle speed

750–850/min (aural check)

- Run engine to operating temperature (80° C, 176° F, cooling water temp.).
- Turn idle speed adjustment knob on the instrument panel fully to the right.
- Disconnect regulator rod (3) and aurally adjust idle speed to 750–800/min using the idle adjustment screw (4) on the throttle adjustment.

Note: If the idle speed cannot be correctly set using this method, then a fundamental idle speed adjustment must be carried out.



3 Regulator rod
4 Idle adjustment screw

Engine M 115
with Stromberg Carburetor

During 1st and 2nd maintenance job,
then every 15,000 km (10,000 miles)

Test Values

Idle speed		1/min	800 – 900
Emission value at idle		% CO	1.0 – 2.5
Vacuum regulator adjustment	Adjustment set screw vacuum hose pulled-off	1/min	1,200 – 1,400
	Distance throttle valve lever — set screw	mm	0.5

USA Version

On all USA vehicles, adjustments should be made according to the values given on identification plate for emission control system.

Model Year	Idle Speed 1/min	Emission Values at Idle % CO
1968/69	750 – 850	2.0 – 2.5
1970		3.0 – 4.0
1971		
1972		2.0 – 3.5
1973		up to 1.5
1974	800 – 900	

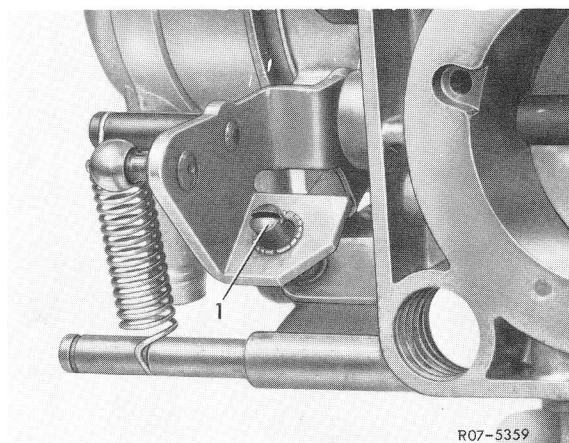
Vacuum Regulator Adjustment

Adjustment of set screw vacuum hose pulled-off 1/min		Distance throttle valve lever-set screw mm
Model year up to 1972	as from 1973	
1,600 – 1,700	1,200 – 1,400	0.5

Test Instruments

Revolution counter, CO measuring instrument, oil tele-thermometer

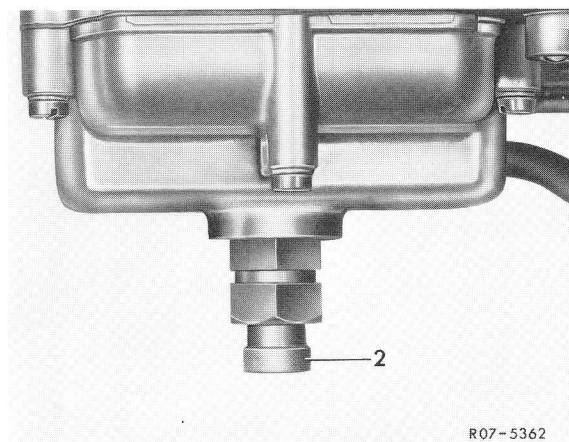
- Connect revolution counter, on vehicles with transistor ignition refer to item 781.
- Switch off right-hand car heating and run the engine to at least 60° C (140° F) oil temperature.
- Check engine idle speed and emission value. If necessary adjust as follows:
- Adjust to prescribed idle speed with idle speed adjustment screw (1).



1 Idle adjustment screw

- Adjust to prescribed emission value with the fuel regulating screw (2).

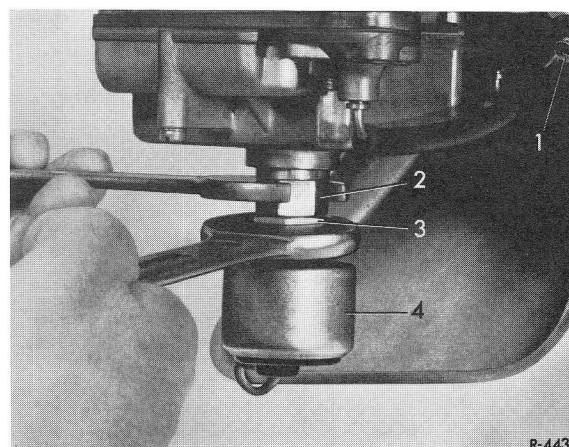
Unscrew = richer
Screw in = leaner



2 Fuel regulating screw

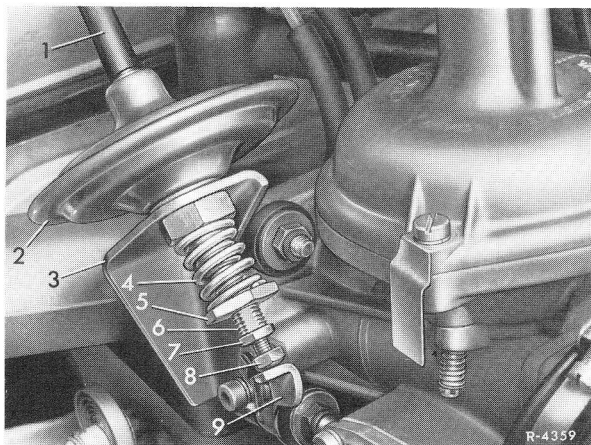
Carburetor with idling speed shutoff valve

- Adjust emission value with the fuel regulating screw (4) (also idle cut-off valve). For this purpose loosen locking nut (3), whilst counterholding the retaining screw (2).
- Following each adjustment of idling speed adjusting screw and fuel control screw. Accelerate briefly, recheck speed and emission value, readjust if required.



2 Retaining screw
3 Locking nut

4 Fuel regulating screw
(Idle cut-off valve)



- | | |
|----------------------|-------------------|
| 4 Compression spring | 7 Counter nut |
| 5 Adjusting nut | 8 Adjusting screw |
| 6 Diaphragm rod | 9 Operation lever |

Adjusting vacuum control

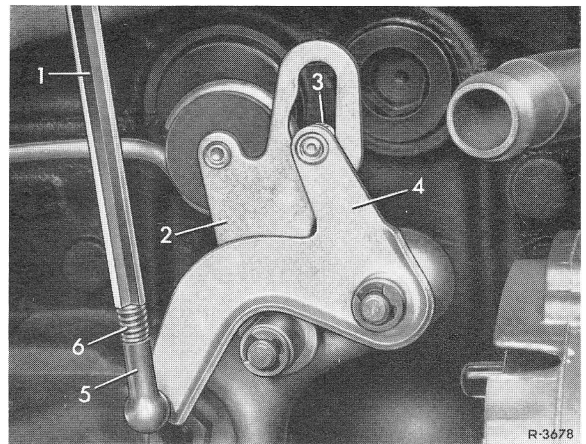
- Run engine at idling speed and pull-off vacuum hose (1) of vacuum regulator. Adjust specified speed by means of adjusting screw (8).

Caution! On vacuum controls with counter nut, loosen counter nut (7) prior to resetting adjusting screw (8). Counterhold diaphragm rod (6) by applying open end wrench to machined flats. When the diaphragm rod is not held, the diaphragm in vacuum box will be damaged. Tighten counter nut (7) again, while applying counter hold to diaphragm rod. Attach vacuum hose.

- At idling speed of engine, adjust compression spring (4) by means of adjusting nut (5) in such a manner that there is approx. 0.5 mm clearance between the adjusting screw (8) and the operation lever (9).

Adjust control linkage

- In vehicles with **manual transmission** adjust regulator rod (1) in such a way that the roller (3) in the slotted lever (2) is in contact with the end stop free of tension

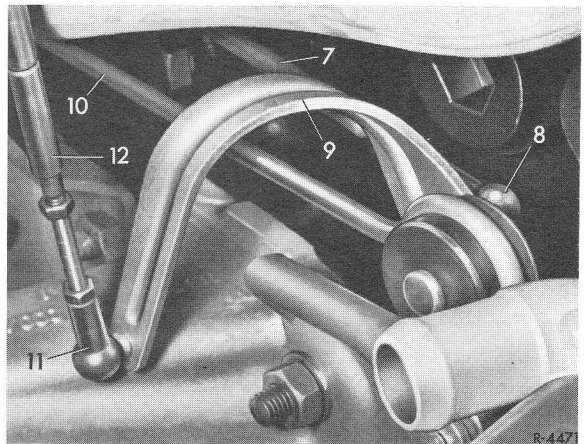


1 Regulator rod
2 Slotted lever

3 Roller

- In vehicles with **automatic transmission** adjust regulator rod (12) at idle in such a way that the regulator rod can be connected free of tension in fully extended position.
- Place selector lever in drive position (automatic transmission), switch on air conditioner and turn power steering to full lock; the engine must continue to run. Adjust engine speed if necessary.

Note: If the idle speed cannot be correctly set using this method, then a fundamental idle speed adjustment must be carried out.



12 Regulator rod

Engines M 114 130 180
with Zenith-carburetor

At the first and second maintenance jobs,
then every 15 000 km / 10 000 miles

Test values

Idle speed rpm	Emission value at idle speed % CO
800–900	2.0–3.5

USA-version

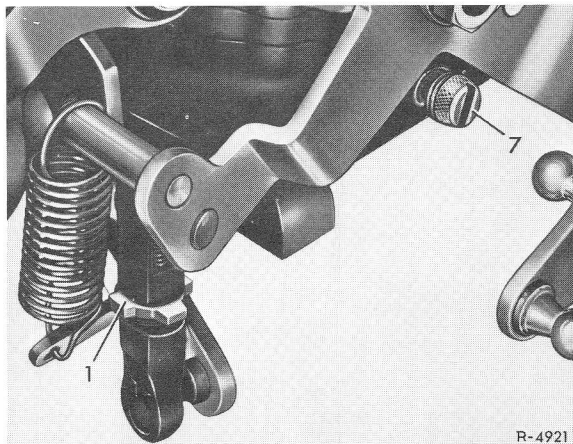
On all vehicles of the USA version adjustment should be made according to the values given on the indicator plate for exhaust emission control.

Engine model	Idle speed rpm				Emission value at idle speed % CO			
	Model year				Model year			
	1968/69	1970	1971	1972	1968/69	1970	1971	1972
M 114	800–900				1.0–1.5	1.8–2.8	—	
M 130							1.0–1.5	
M 180	800–900	—			1.5–2.5	—		

Test equipment

Revolution counter, CO measuring instrument, remove oil temperature gauge

- Connect revolution counter; on vehicles with transistor ignition refer to item 781.
- Check engine idle speed and emission value. If necessary adjust as follows:
- Adjust idle speed uniformly on both carburetors to the prescribed speed with the idle adjustment screw (1).
- Carefully screw both mixture regulating screws (7) fully in and unscrew uniformly approx. 2 turns and adjust to prescribed emission value.

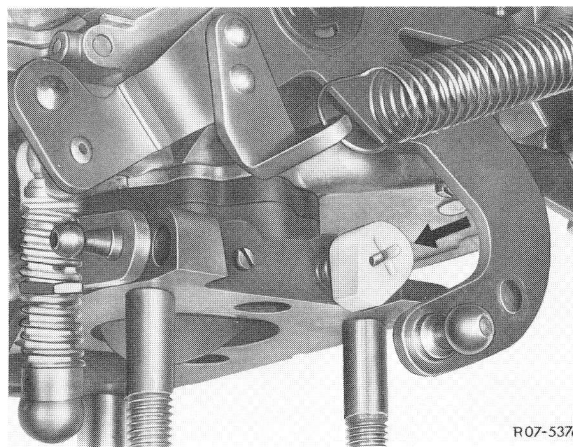


1 Idle speed adjustment screw
7 Mixture regulating screw

In carburetors with limited mixture enrichment (emission control) turn both mixture regulating screws (arrow) to the right to the stop, then uniformly to the left and adjust to the prescribed emission value.

Unscrewing = richer
Screwing in = leaner

- Accelerate briefly, recheck speed and emission value, if necessary readjust.



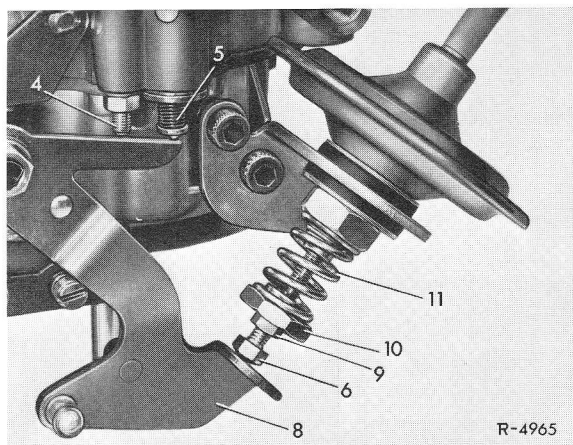
R07-5376

Adjust vacuum control

- With the engine stopped, screw-out adjusting screw (6) of vacuum box until the venting valve (5) is lifted for at least 1 mm via actuating lever (8).

Caution! For vacuum controls with counter nut, loosen counter nut (9) prior to resetting adjusting screw (6). Counterhold diaphragm rod (6) by applying open end wrench to machined flats. When the diaphragm rod is not held, the diaphragm in vacuum box will be damaged. Tighten counter nut (7) again, while applying counterhold to diaphragm rod.

- At idling speed of engine adjust pressure spring (11) with adjustment nut (10) in such a manner that there is approx. 0.1 mm clearance between adjustment screw (6) and operation lever (8).



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5 Float housing – venting valve
6 Adjustment screw
8 Operation lever
9 Counter nut
10 Adjustment nut
11 Pressure spring

USA version model year 1972

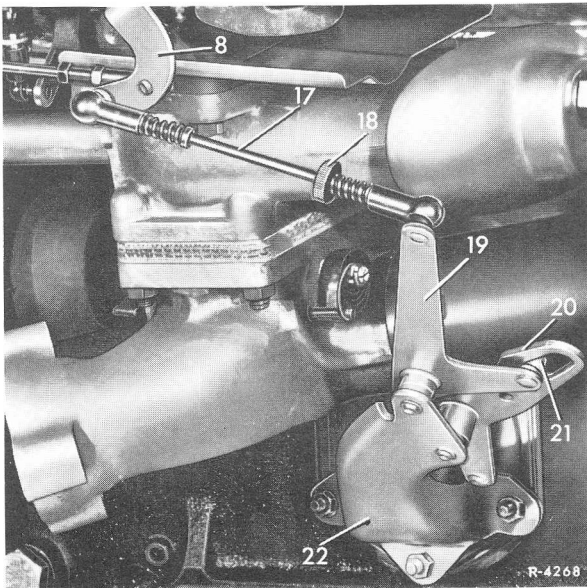
- Run engine at idling speed and pull-off vacuum hose of vacuum control. Set to a speed of 1,200–1,400 rpm by means of adjusting screw (6).

Caution! Loosen counter nut (9) prior to resetting adjusting screw (6), while applying open end wrench to machined flats of diaphragm rod. If the diaphragm rod is not held, the diaphragm in the vacuum box will be damaged. Tighten counter nut (9) again while counterholding diaphragm rod. Attach vacuum hose.

- At idling speed of engine, adjust compression spring (11) by means of adjusting nut (10) in such a manner that approx. 0.1 mm play is available between the adjusting screw (6) and the actuating lever (8).

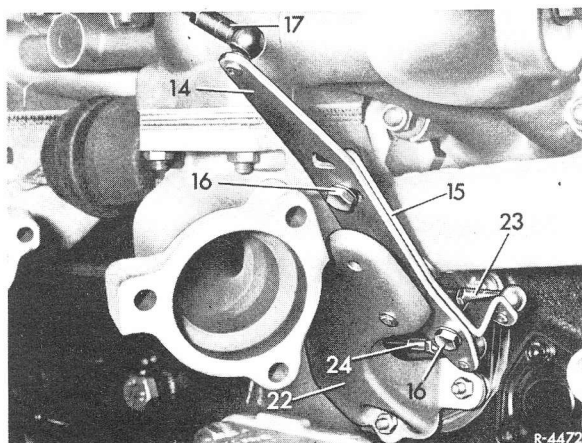
Adjusting control linkage

- In vehicles with **manual transmission** adjust regulator rod (17) in such a way that the roller (21) in the slotted lever (20) is in contact with the end stop free of tension.



17 Regulator rod
20 Slotted lever

21 Roller



- In vehicles with **automatic transmission** adjust the regulator rod (17), with the engine running, in such a manner that the regulator rod can be connected free of tension in fully extended position.

- Place selector lever in drive position (automatic transmission), switch on air conditioning and turn power steering to full lock; the engine must continue to run. Adjust engine speed if necessary.

Note: If the idle speed cannot be correctly set using this method, then a fundamental idle speed adjustment must be carried out.

During 1st and 2nd maintenance job,
then every 15,000 km (10,000 miles)

Injection engine M 110 114 116 117

Test Values

Engine	Idle Speed 1/min	Emission Value at Idle % CO
M 110	750 – 850	1.0 – 3.5
M 114	750 – 800	2.0 – 3.5
M 116	700 – 750	
M 117		1.5 – 2.5

USA Emission Control (black identification plate)

On all USA vehicles adjustments should be made according to values given on identification plate for emission control system.

Engine	Idle Speed 1/min Model year			Emission Values at Idle % CO Model year		
	1970	1971	1972/73/74	1970	1971	1972/73/74
M 116	750 – 800		–	1.5–3.0	1.0–2.0	–
M 117	–		700 – 800	–		0.5 – 2.0

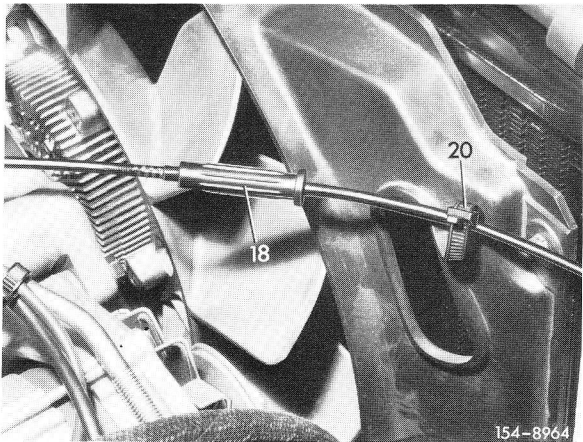
California Emission Control (green identification plate)

On all California vehicles adjustments should be made according to values given on identification plate for emission control system.

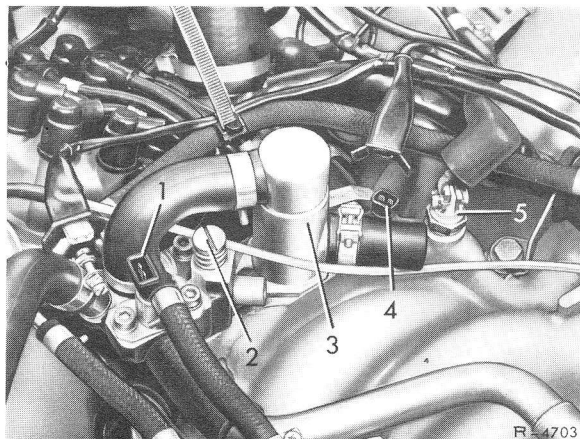
Engine	Idle Speed 1/min Model year 1974	Emission Value at Idle % CO Model year 1974
M 117	700 – 800	with air injection max. 1.0

Test Instruments

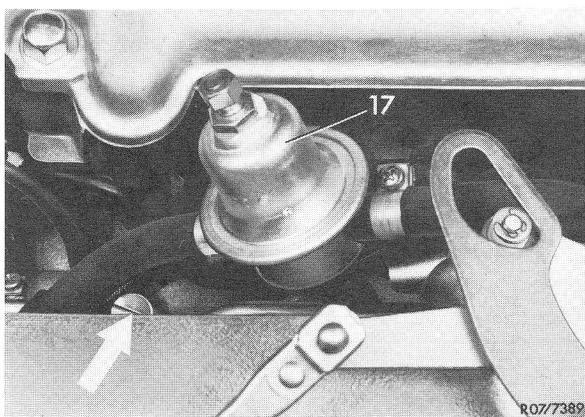
Revolution counter, CO measuring instrument, oil tele-thermometer



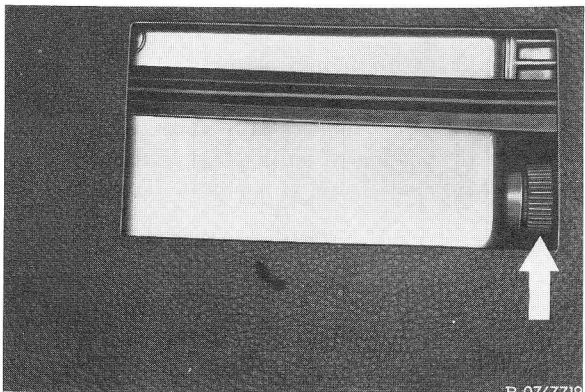
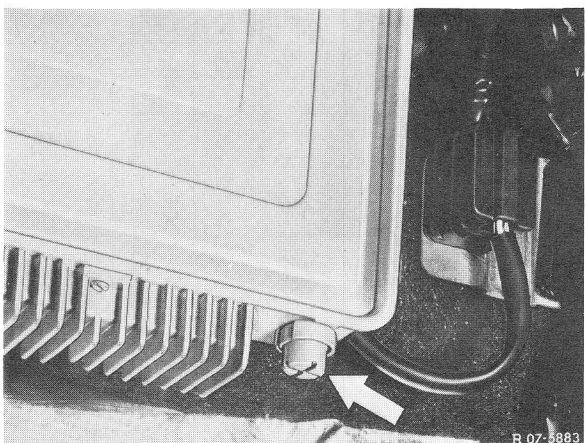
- Connect revolution counter; on vehicles with transistor ignition (refer to Job No. 781).
- Switch-off air-conditioner.
- Check whether on vehicles with cruise-control the bowden wire rests free of tension against regulating lever. Adjust bowden wire with adjusting nut, if required.



2 Idle speed air screw



Idling air screw M 110



- Run engine to at least 60–80° C (140–176° F) oil temperature.
- Check engine idle speed and emission value. If necessary adjust as follows:
- Adjust to prescribed speed with idle speed air screw (2 or arrow).

- Adjust to specified exhaust emission value by means of idling speed mixture adjusting screw on control unit (arrow).

Turn to left = leaner

Turn to right = richer

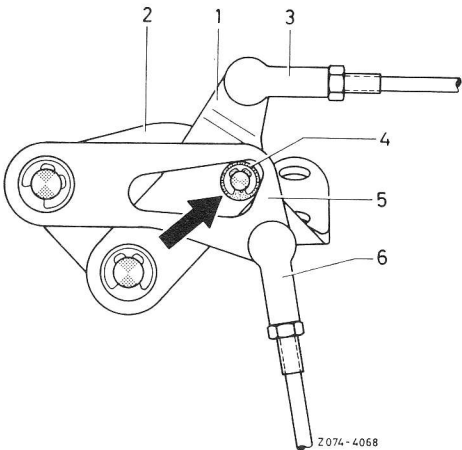
Note: In the case of type 107 or 114 the control unit is accessible after loosening the panelling below the glove compartment.

On model 116 the control unit is mounted in legroom at front right. The idling speed mixture adjusting screw is accessible upon removal of ornamental molding.

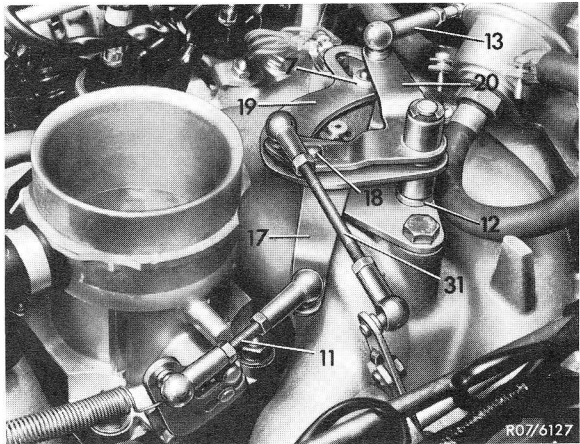
- Accelerate briefly, recheck speed and emission value, if necessary readjust.

Adjust control linkage

- In vehicles with slotted lever (5, 19, 70), adjust regulator rod (3, 11, 67) in such a manner that the roller (4, 7, 75) is free of tension and in contact with the end stop of the slotted lever.



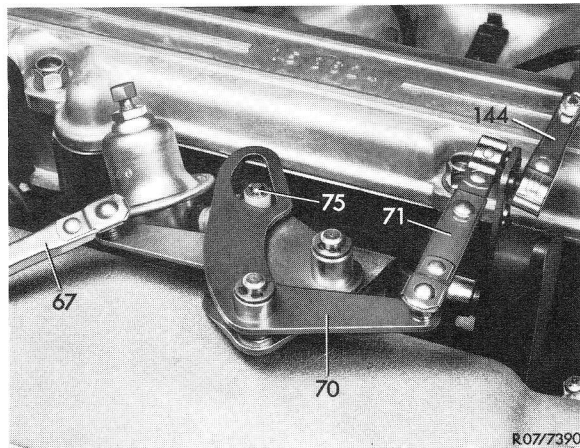
M 114
3 Regulator rod
4 Roller
5 Slotted lever



M 116, 117
7 Roller
11 Regulator rod
19 Slotted lever

- Place selector lever in drive position (automatic transmission), switch on air conditioner and turn power steering to full lock; the engine must continue to run. Adjust engine speed, if necessary.

Note: If the idle speed cannot be correctly set using this method, then a fundamental idle speed adjustment must be carried out.



M 110
67 Regulator rod
70 Slotted lever
75 Roller

Injection engines M 100 130

At the first and second maintenance jobs,
then every 15 000 km / 10 000 miles

Test values

Engine	Idle speed rpm	Emission value at idle speed % CO
M 100	550–600	2.0–3.5
M 130	750–800	If the engine does not run in a satisfactory manner, the emission value may be adjusted to the legally prescribed value of 4.5

USA-version

On all vehicles of the USA version adjustment should be made according to the values given on the indicator plate for exhaust emission control.

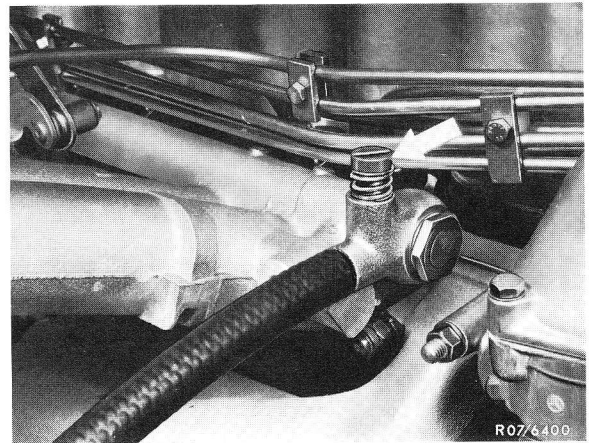
Engine model	Idle speed rpm				Emission value at idle speed % CO			
	Model year				Model year			
	1968/69	1970	1971	1972	1968/69	1970	1971	1972
M 100	560–600				3.5–5.0			1.0–4.0
M 130	700–800	750–850	700–850		3.0–4.5	3.5–5.0	1.5–3.5	

Test equipment

Revolution counter, CO measuring instrument, remove oil temperature gauge

- Connect revolution counter; for vehicles with transistorized ignition refer to item 781.
- Run engine to at least 60° C (140° F) oil temperature.
- Check that the regulator levers are in contact with the venturi control unit and the injection pump.
- Check engine idle speed and emission value. If necessary adjust as follows:

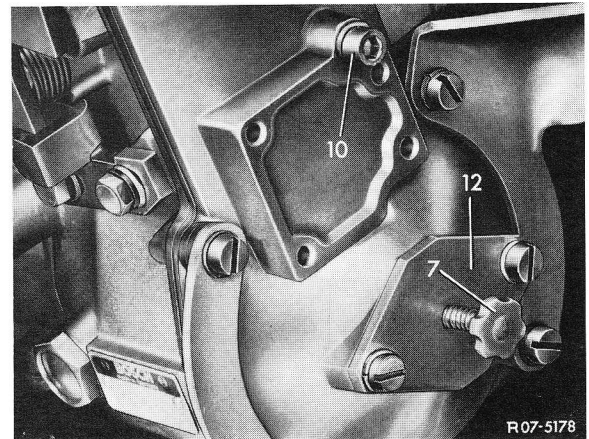
- Adjust to prescribed speed with the idle speed air screw (arrow).



- Adjust to prescribed emission value with the adjustment screw (7) on the injection pump **with the engine switched off**.

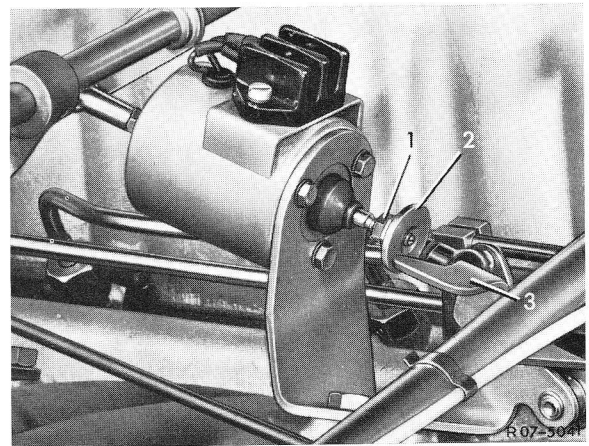
Turn to right = richer
Turn to left = leaner

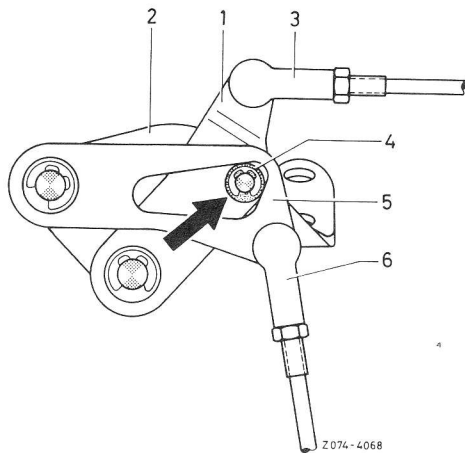
- Accelerate briefly, recheck speed and emission value, if necessary readjust.



7 Adjusting screw

- In engines with solenoid for maintenance of constant idle speed, the adjusting nut of the solenoid (2) is to be adjusted, with the selector lever in drive position or the air conditioner switched on, so that a speed of 700 rpm is produced.



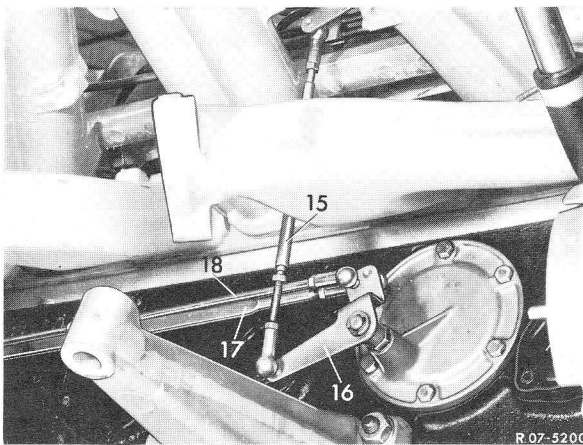


3 Regulator rod
4 Roller

5 Slotted lever

Adjust control linkage

- In vehicles with **manual transmission** adjust regulator rod (3) in such a way that the roller (4) in the slotted lever (5) is contact with the end stop free of tension.



15 Regulator rod

- In vehicles with **automatic transmission** disconnect regulator rod (15) and connect free of tension in fully extended position.

- Place selector lever in drive position, (automatic transmission) switch on air conditioner and turn power steering to full lock; the engine must continue to run. Adjust engine speed, if necessary.

Note: If the idle speed cannot be correctly set using this method, then a fundamental idle speed adjustment must be carried out.

During 1st and 2nd maintenance job,
then every 15,000 km (10,000 miles)

Engine M 110
with Solex Carburetor 4A1

Test Values

Idle Speed 1/min	Emission Value at Idle % CO
800 – 900	1.0 – 2.5

USA Emission Control (black identification plate)

On all USA vehicles adjustments should be made according to values given on identification plate for emission control system.

	Idle Speed 1/min	Emission Value at Idle % CO
Model Year 1973/74	750 – 950	up to 1.5

California Emission Control (green identification plate)

On all California vehicles adjustments should be made according to values given on identification plate for emission control system.

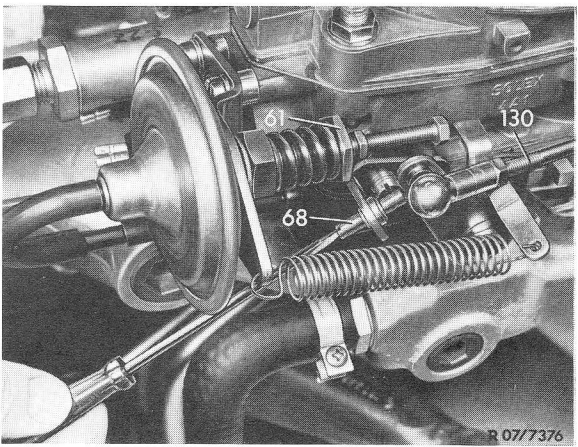
Model Year	Idle Speed 1/min	Emission Values at Idle % CO	
		with air injection	without air injection
1974	750 – 950	max. 1.5	6 – 8

Test Instruments

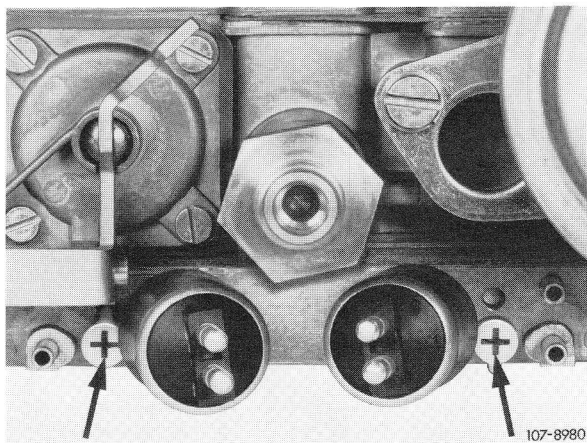
Revolution counter, CO measuring instrument, tele-thermometer

Complete idle speed test with **air filter in place**.

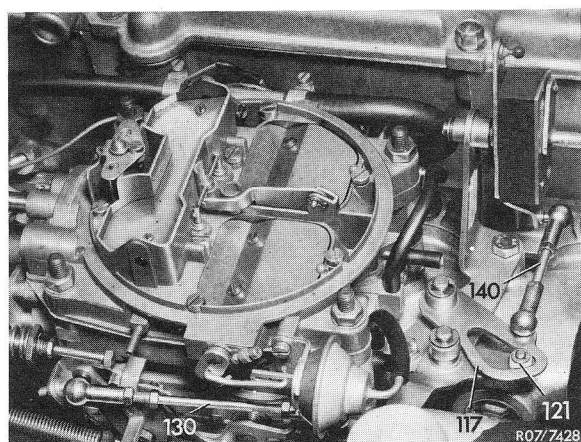
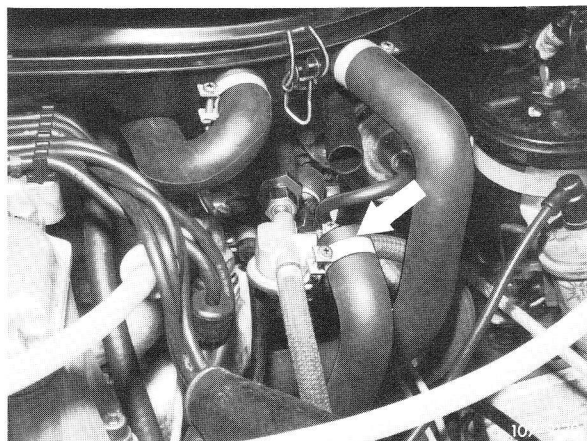
- Connect revolution counter; on vehicles with transistor ignition (refer to Job No. 781).
- Run engine to at least 60 – 80°C oil temperature.
- Check idle speed and emission value, adjust as follows, if required:
- Set to specified speed by means of idle speed adjusting screw (68).



68 Idle speed adjusting screw



Mixture control screws

117 Slotted lever
121 Roller

130 Regulator rod

- Turn both mixture control screws (arrows) toward the right against stop, then turn both screws simultaneously to the left until the exhaust emission value is attained.

Screwing out = richer

Screwing in = leaner

- Accelerate briefly, recheck idle speed and emission value, if necessary readjust.

California Emission Control

- Pull center hose (arrow) from air filter; a noticeable air flow should be observed on hose. In addition, a bubbling noise should be heard at air intake line.

Uniformly adjust emission value **without** air injection on mixture regulating screws. For this purpose, turn both mixture regulating screws (arrows) clockwise up to stop, then turn both uniformly counter-clockwise and adjust to specified emission value.

Attach center hose again and check emission value **with** air injection. Adjust, if required.

Screwing-out = richer

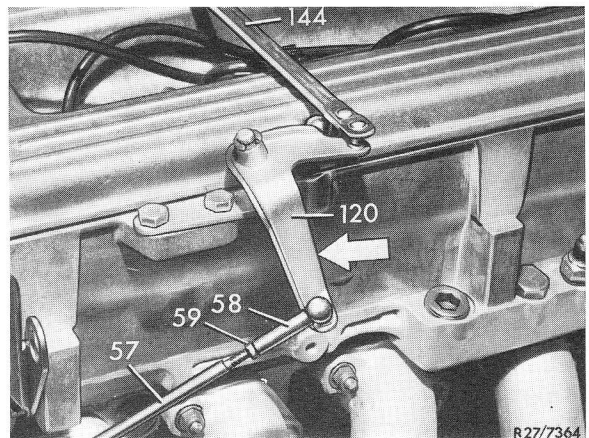
Screwing-in = leaner

- Accelerate for a short moment, check speed and emission value once again and adjust, if required.

Adjust control linkage

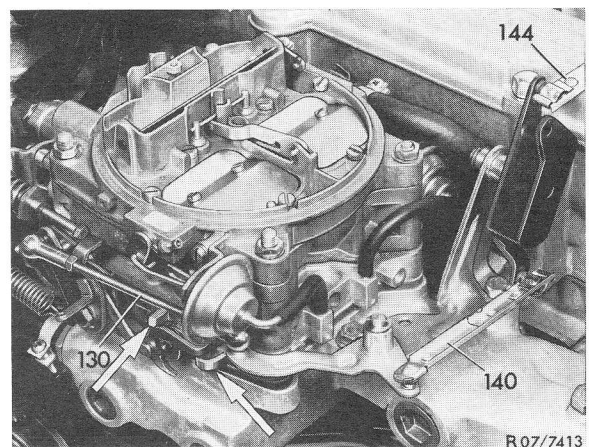
- On vehicle **with manual transmission**, run engine at idling speed. Adjust regulator rod (130) in such a manner that the roller (121) in the slotted lever (117) rests against end stop without tension.

- On vehicles **with automatic transmission**, run engine at idling speed. Disconnect control pressure rod (57) from automatic transmission. Push connecting rod (140) together. Push angle lever (120) toward the rear (arrow). Push control pressure rod also toward the rear against stop, attach ball socket (58) free of tension and adjust, if required.



57 Control pressure rod
58 Ball socket

120 Angle lever

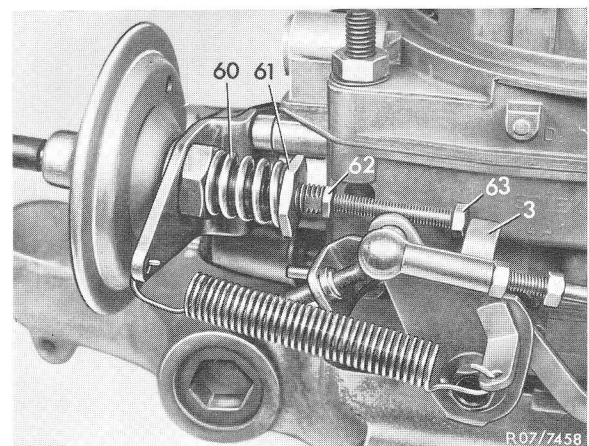


140 Connecting rod

Adjust vacuum governor

- Run engine at idling speed. Pull vacuum hose from governor, then set to a speed of 1600/min (on vehicles of USA version 1200–1400/min) by means of adjusting screw (63) and reattach vacuum hose.

Note: Loosen counter nut (62) prior to setting adjusting screw (63). Apply **counterhold** to **diaphragm rod** by positioning an open end spanner against machined flats. When the diaphragm rod is not held in place, the diaphragm in the vacuum box will be damaged. Retighten counter nut (62) applying counterhold to the diaphragm rod.



3 Throttle valve lever
60 Compression spring
61 Adjusting nut

62 Counter nut
63 Adjusting screw

Adjust compression spring (60).

Automatic transmission: Engage driving position. The speed should be 600–700/min. If required, set compression spring to this speed by means of adjusting nut (61). Then turn power steering to full lock. Switch on air-conditioning system. The engine should keep running. Adjust speed once again with adjusting nut, if required.

Manual transmission: Run engine at idling speed. Adjust compression spring (60) with adjusting nut (61) in such a manner that approx. 1.0 mm clearance is attained between the adjusting screw (63) and the throttle valve lever (3).

- Should it not be possible to adjust the idle speed by this procedure, a basic idle speed adjustment job is necessary.