

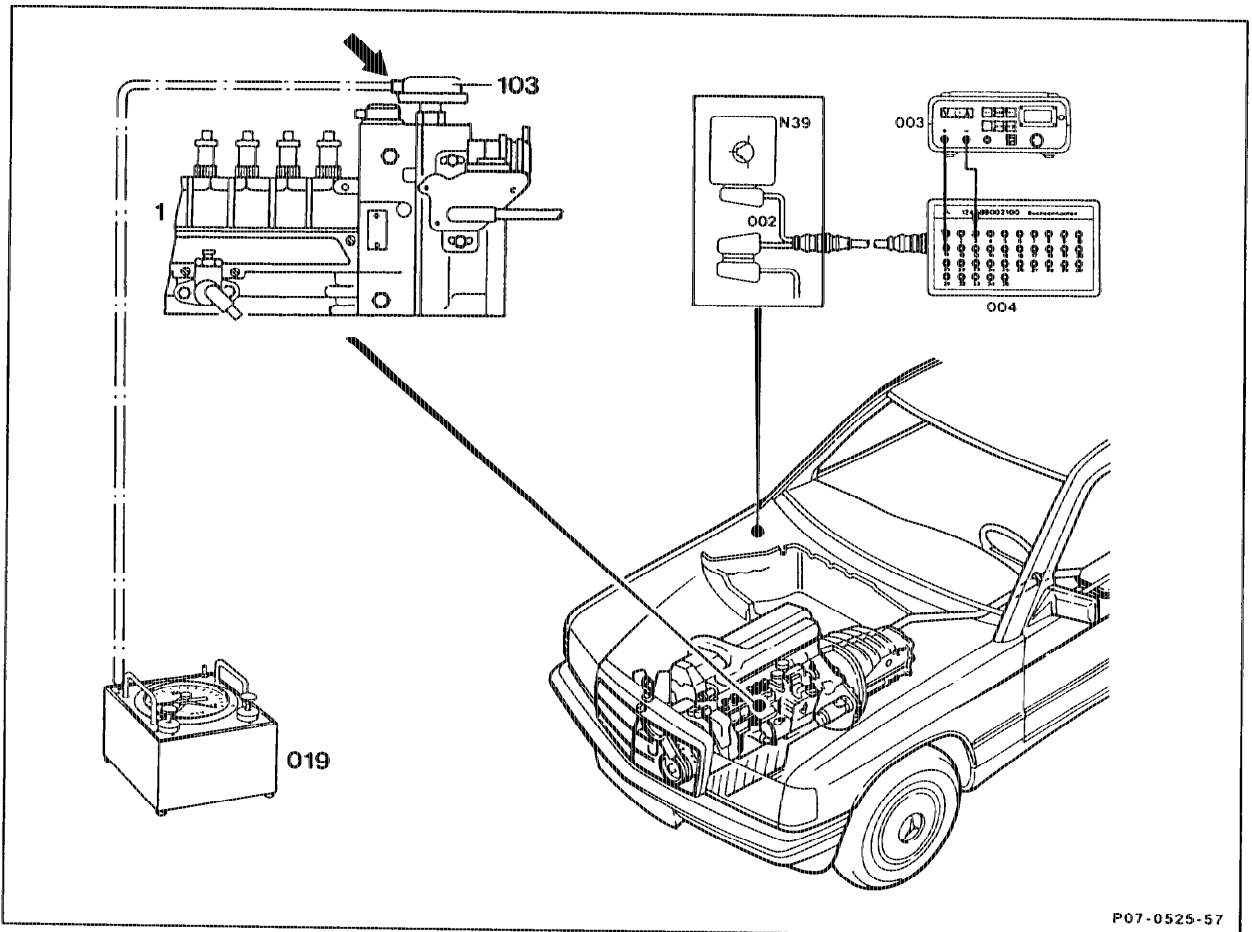
**Complaint:**

Poor performance and/or high fuel consumption.

**Test conditions:**

Engine coolant temperature > 80 °C.

Air conditioning system switched off.



P07-0525-57

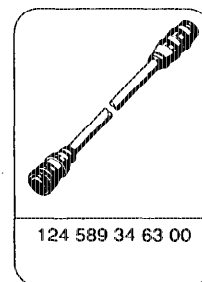
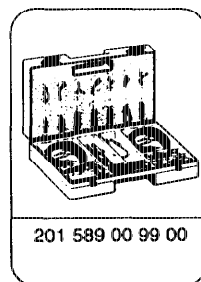
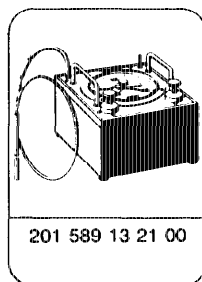
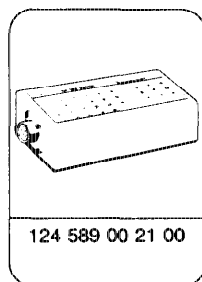
- Contact box (004) ..... connect into circuit at EDS control unit (N39) as shown in connection diagram.
- Multimeter (003) ..... connect to jacks 3 and 11. Press button "V =".

Pressure, vacuum tester (019) .....	connect to ALDA unit (103) and pressurize with 1000 mbar gauge pressure. White pressure line detached.
Parking brake .....	apply. Start engine, depress service brake. Engage drive position "D", apply full throttle and take reading of voltage at 1500–2200 rpm and note. Specification: $3.27 \pm 0.08$ V, at $\leq 1600$ m above MSL. Pay attention to note 07.1–1120, Section "B".
Pressure, vacuum tester .....	disconnect and admit air to ALDA unit (103). Pressure line must not be connected. Stall engine as above. Take reading and note, compare with table.

**Note**

A measurement or hard brake application must not last longer than 5 seconds. A pause of at least 2 minutes is to be introduced between two hard brake applications.

**Special tools**



**Commercially available testers**

Designation	e. g. make, order no.
Multimeter	Sun, DMM-5

Compare voltage reading or corrected voltage of control rod travel sensor with table.

### Control rod travel sensor voltage

Engine speed	Pressure at ALDA	Height above MSL	Position of control lever at governor	Spec. voltage at control rod travel sensor evaluation circuit
1/min	mbar	m		$U_a$ corr Volt
1500–2200	1000 (gauge pressure)	$\leq 1600$	at full-load stop	$3.27 \pm 0.08$
1500–2200	Atmospheric pressure without tester, pressure line at ALDA disconnected	0	at full-load stop	$2.45 \pm 0.10$
		100		$2.43 \pm 0.10$
		200		$2.42 \pm 0.10$
		300		$2.40 \pm 0.10$
		400		$2.39 \pm 0.10$
		500		$2.37 \pm 0.10$
		600		$2.35 \pm 0.10$
		700		$2.34 \pm 0.10$
		800		$2.32 \pm 0.10$
		900		$2.31 \pm 0.10$
		1000		$2.29 \pm 0.12$
		1100		$2.28 \pm 0.12$
		1200		$2.26 \pm 0.12$
		1300		$2.25 \pm 0.12$
	1400	$2.23 \pm 0.12$		
	1500	$2.22 \pm 0.12$		
	1600	$2.20 \pm 0.12$		

Measure reference voltage at jacks 23 (red) and 3 (black). If the reference voltage ( $U_{ref}$ ) is beyond  $5 \pm 0.1$  V, the two control rod travel sensor outlet voltages ( $U_{a, actual}$ ) measured previously, must be amended as follows:

$$U_{a, corr} = \frac{U_{a, actual} \times 5 \text{ V}}{U_{ref}}$$

If the control rod travel sensor voltages do not agree with the figures stated in the table above, the injection pump must be set on an injection pump test stand.

### Calculation example

Reference voltage measured:

$$U_{\text{Ref}} = 5.5 \text{ V}$$

Control rod travel sensor output voltage measured:

$$U_{\text{a, act}} = 2.475 \text{ V}$$

Altitude of test location:

1300 m above MSL

Hence:

$$U_{\text{a, corr}} = \frac{U_{\text{a, act}} \times 5 \text{ V}}{U_{\text{ref}}} = \frac{2.475 \times 5 \text{ V}}{5.5} = 2.25 \text{ V}$$