

# 07.1-180 Testing control rod travel sensor - Turbodiesel (Model Year 1986/87 only)

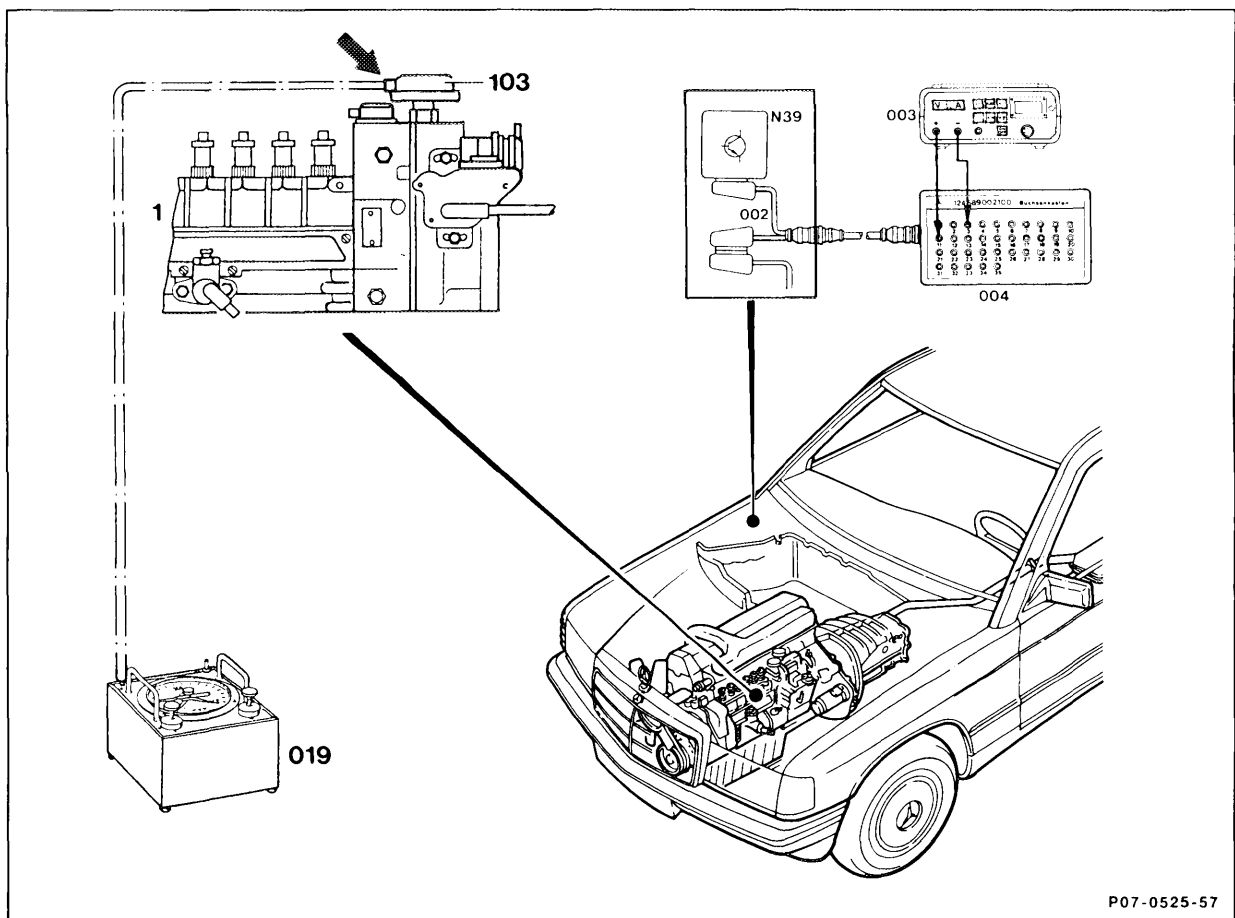
**Problem:**

Poor performance and/or high fuel consumption.

**Test conditions:**

Engine coolant temperature > 80°C.

Air-conditioning system off.



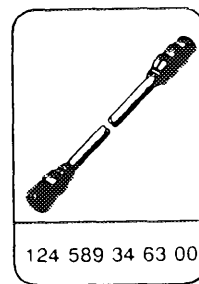
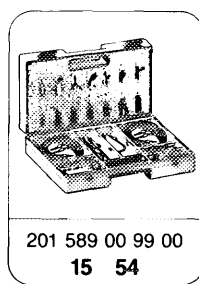
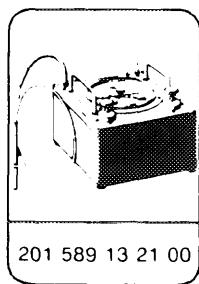
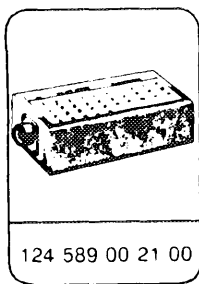
- Contact box (004) ..... connect into circuit at EDS control unit (N39) as shown in connection diagram.
- Multimeter (003) ..... connect to jacks 3 and 11. Press button "V =".

Pressure, vacuum tester (019) . . . . .	connect to ALDA unit (103) and pressurize with 1000 mbar gauge pressure. White pressure line detached.
Parking brake . . . . .	apply. <b>Start</b> 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 07.1-190.
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 should occur between two hard brake applications.

**Special tools**



**Commercial tester**

Multimeter

e.g. 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
rpm	mbar	m		$U_{a, \text{corr.}}$ volts
1500–2200	1000 (gauge pressure)	≤ 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 ( $U_{\text{ref}}$ ) is beyond  $5 \pm 0.1$  V, the two control rod travel sensor outlet voltages ( $U_{a, \text{actual}}$ ) measured previously, must be recalculated as follows:

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

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