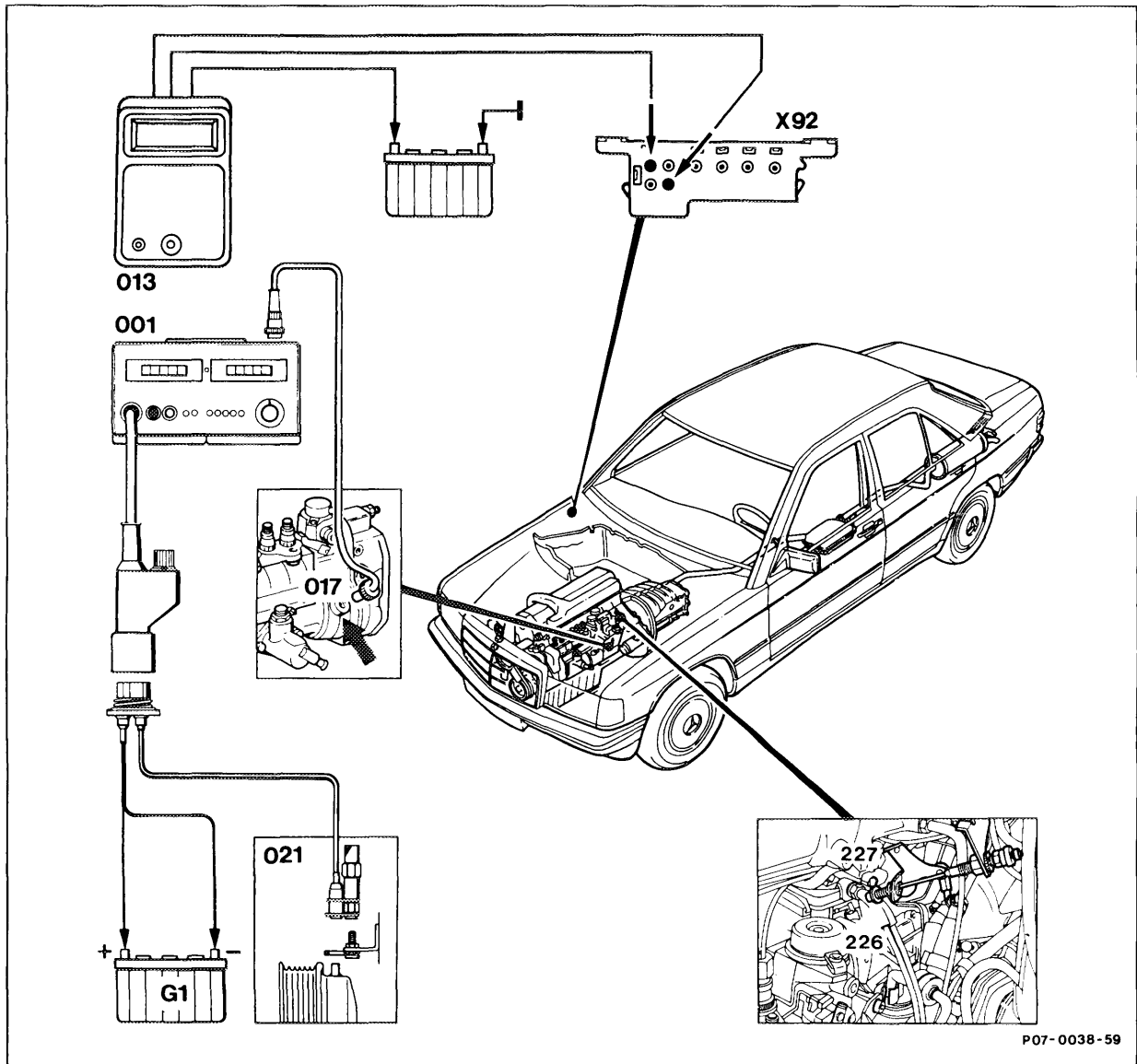


# 07.1-110 Testing, tuning engine - Turbodiesel



P07-0038-59

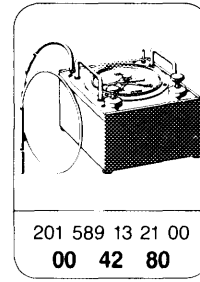
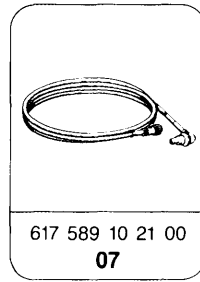
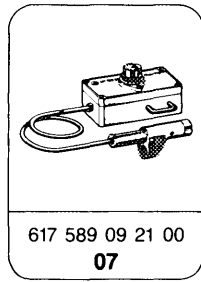
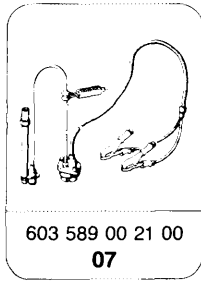
Test sheet .....	Complete, enter measured values.
Coolant level .....	check, correct.
Engine oil level .....	check; pay attention to oil level (visual inspection).
Oil level in automatic transmission .....	check, correct.
Air filter .....	remove and install.
Tester (001, 013, 017) .....	connect.
Pulse generator (021) .....	connect.

Accelerator control linkage . . . . .	check ease of movement, condition. Lubricate bearing points, relay levers, ball sockets.
Full throttle stop . . . . .	check from accelerator pedal; adjust Bowden cable if necessary.
Idle stop . . . . .	check. Min. specified value 11.5 Volts.
Engine . . . . .	raise to coolant temperature of approx. 80°C.
Air conditioning or automatic climate control . . . . .	turn off.
Idle speed . . . . .	check, adjust if necessary. Detach plug from actuator.
Start of delivery . . . . .	check. RI specified value 15° ATDC
Max. speed at no-load . . . . .	check. Specified value: 5150 ± 150 rpm
Timing device . . . . .	check. Specified value: at 5100 rpm approx. + 3° to + 5° using governor pulse method (RIV).
Electronic diesel system (EDS) . . . . .	check, with pulse counter (013) (07.1-190).

**Test and adjustment data**

Engine	Idle speed in rpm with control	Idle speed in rpm without control Plug at actuator disconnected	Start of delivery with digital tester RI specification	Maximum speed at no-load or end of cutoff in rpm	Timing device at no-load or end of cutoff RIV method in degrees
602.96	680 ± 20	620 ± 40	14 ± 0.5° ATDC	5150 ± 150	+ 3° to + 5°
603.96/97	630 ± 20	570 ± 40	15 ± 1° ATDC		

## Special tools



## Commercial testers

### Used without adapter

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Digital testers	e.g. Bosch, ETD 019.02 or MOT 350/500/501 Sun, DIT 9100 AVL, Diesel-Tester 873
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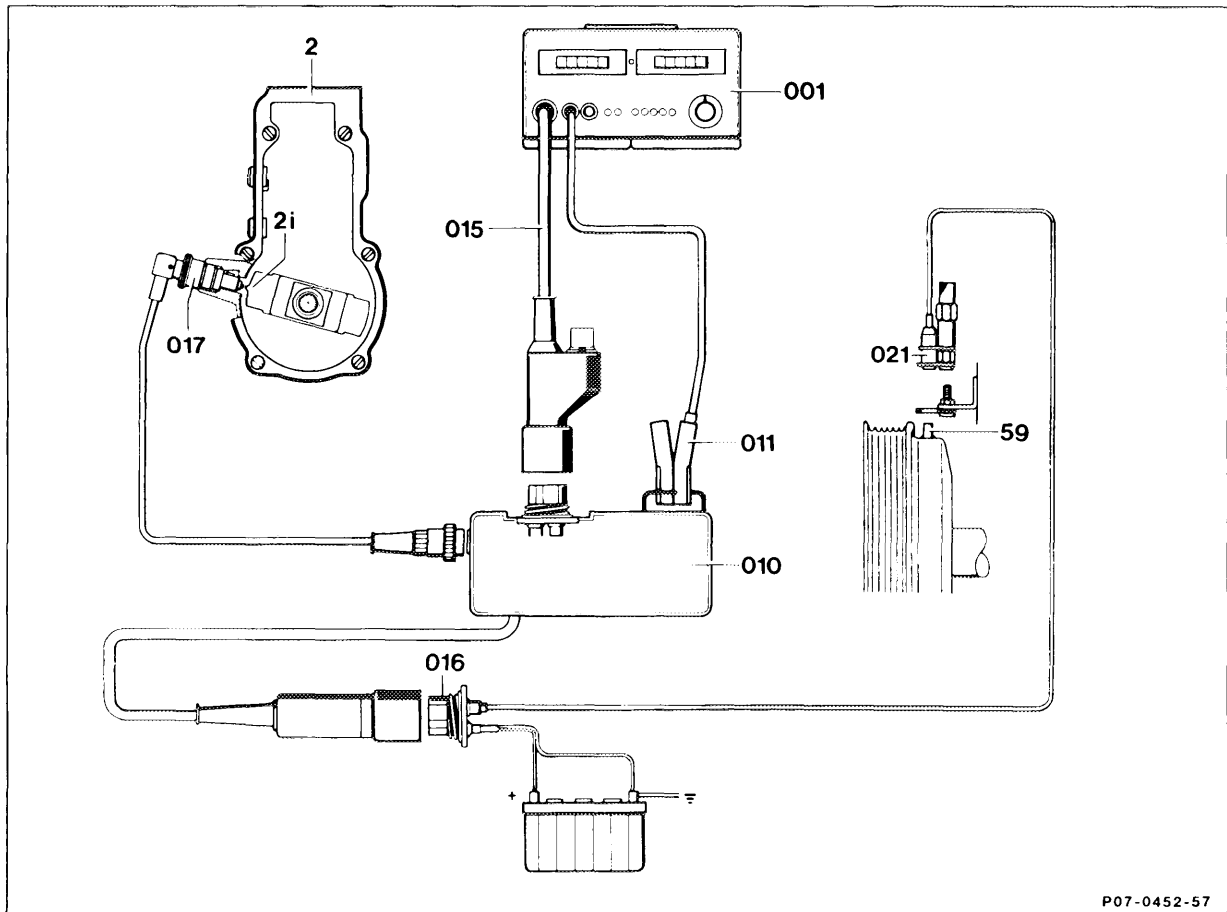
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### Used with adapter

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Digital testers	e.g. Bosch, MOT 001.03
Lambda tester (with EDS only)	e.g. Bosch, KDJE-P 600 Hermann, L 115

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P07-0452-57

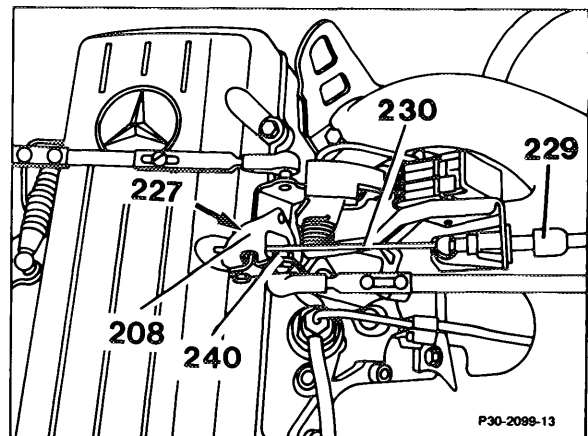
Connection diagram for existing testers with adapter

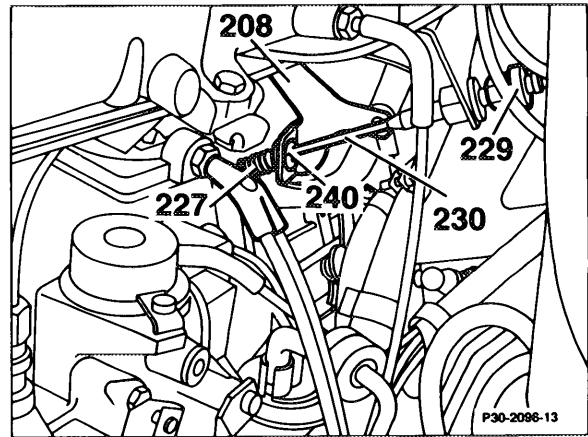
001	Digital tester	017	RI generator
010	Adapter	021	TDC pulse generator
011	Trigger clamp	2	Governor
015	Test cable with connector	2i	RI generator pin
016	Diagnostic socket	59	TDC generator pin

## Testing, tuning

- 1 Complete test sheet. Enter test values.
- 2 Check coolant level, correct.
- 3 Check engine oil level, paying attention to condition of oil. Visual inspection.
- 4 Check oil level and automatic transmission.
- 5 Connect tester (013, 001, 017) according to connection diagram.
- 6 Connect pulse generator (021).
- 7 Remove and install air filter element.
- 8 Check accelerator control for ease of movement and condition. Lubricate bearing points, relay levers, ball sockets.
- 9 Check full throttle stop from accelerator pedal; adjust at adjusting screw (229) if necessary.

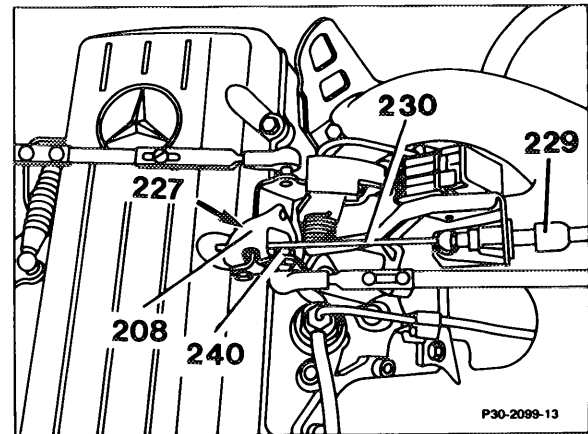
Engine 602.96



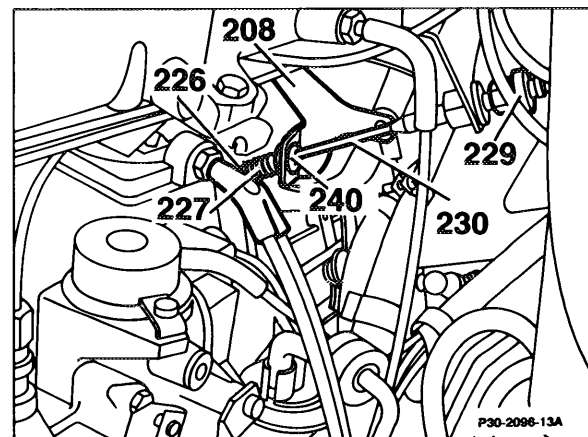


Engine 603.96

10 Check idle stop.  
The spring plate (226) of the Bowden cable (230) must be contacting the compression spring (227).

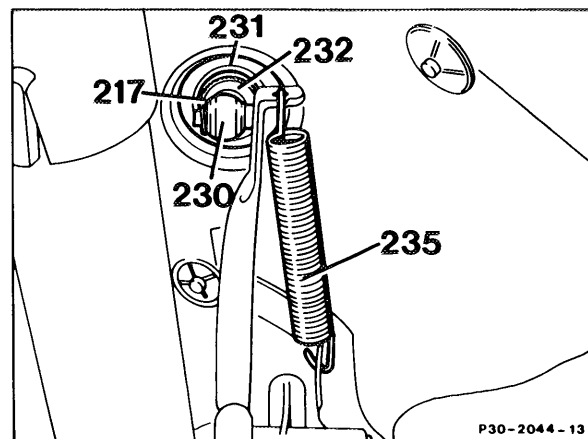


Engine 602.96



Engine 603.96

Set Bowden cable (230) with adjusting nut (232) from the car interior, if necessary.



11 Test voltage at the battery.

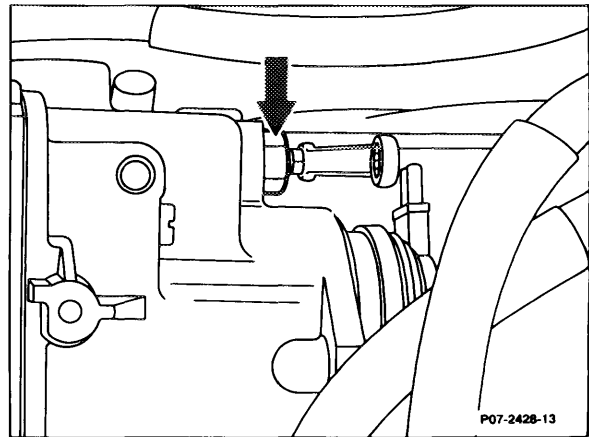
Specification: at least 11.5 V.

12 Raise engine to coolant temperature of approx. 80°C.

13 Turn off air-conditioning or automatic climate control.

14 Test idle speed.

Detach to 2-pin connector on actuator. Set idle speed. Loosen locking nut (arrow) for this step.



Engine	Idle speed in rpm <b>with control</b>	Idle speed in rpm <b>without control</b> Plug on actuator disconnected
602.96	680 ± 20	620 ± 40
603.96/97	630 ± 20	570 ± 40

Read off start of delivery

RI specification 15 ± 1° ATDC.

15 Test "maximum speed" at no-load.

Specification: 5150 rpm ± 150

16 Test timing device at no-load.

Specification: at approx. 5100 rpm  
+ 3 to + 5° using RIV method.

17 Test electronic diesel system.

(07.1–190).