Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

4. Edition En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model
Use overflow valve 1 417 413 012

supersedes 8.84
company Daimler Benz
engine OM 617 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instructions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) Control rod travel 19,5-22,5

without ALDA (2,05-2,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7		Rotational speed rev/min 8	Control rod travel mm 9
27-31	①	min.11	100	69	⑦	12,1-12,3	2180		⑫	100	20,5-21,5
	②	max.11	320		⑧				⑬		
	③	5,7-5,8	365		⑨	11,2	2300-2320		⑭	1600	13,1-13,3
	④	** -	-		⑩	4,0	2620-2720			1000	13,5-13,6
	⑤	-	-		⑪	0,0-1,0 -	2950 -		⑥	Switching point 260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0	(12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5)	(15)
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instructions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke: 2,10-2,20 mm (from BDC) — Control rod travel: 19,5-22,5

without ALDA (2,05-2,25)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in ☐ — Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm 2	rev/min 3	4	mm 5	rev/min 6	7	rev/min 8	mm 9
27-31 ①	min.11	100	69 ⑦	12,1-12,3	2180	⑫	100	20,5-21,5
②	max.11	320	⑧			⑬		
③	5,7-5,8 **	365	⑨	11,2	2300-2320	⑭	1600	13,1-13,3
④	-	-	⑩	4,0	2620-2720		1000	13,5-13,6
⑤	-	-	⑪	0,0-1,0	2950	⑥	Switching point 260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery ⑲ Test oil temp. 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 ⑫a
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5) ⑮
					375	(5,5-9,5)++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.86

Testing with ALDA

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^o. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^o. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000 $^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42°.

10. ** Idle checking point