

# Test Specifications for Injection Pump and Governor

<b>Injection Pump</b> PES 4 M 50 A 320 RS 14 RS 14 z (please turn over)	<b>with Governor</b> EP/MN 60 M 12 d M 13 d	<b>DAI Sheet</b> <b>1.9 h</b> dated: Feb. 15th 1962
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## A. Adjustment Data of the Injection Pump

Feed Begin at a Pre-stroke of 1.7+0.1 mm (from BDC) at Control Rod Travel 18

1	2	3	4	5	6
Speed r. p. m.	Control Rod Travel mm	Feed Quantity cm <sup>3</sup> /100 strokes	Differential cm <sup>3</sup> /100 strokes	Feed Quantity Drop (between 1000 and 200 r. p. m.) cm <sup>3</sup> /100 strokes	Pre-tension of Spring (Adaptation Valve) mm
1000	9	0.9-1.3	0.2		
	15	3 -3.5			
	18	3.8-4.4			
200	9	0.8-1.2			

Adjust delivery of equal quantities within outlined  limits

## B. Adjustment of Governor

1	2	3	4	5	6	7	8	9	10	11
Compensating Path mm	Tightness		Adjusting Point Control Rod Travel		Adjustment Supplementary Spring		Control Rod Travel Test		Compensation	
	Vacuum Drop mm Water Col.	Time red. sec.	Vacuum mm Water Col.	Control Path mm	Vacuum mm WC	Control Path mm	Vacuum mm Water Col.	Control Path mm	Vacuum mm Water Col.	Control Path mm
1.2+0.1	500-480	10	-	-	-	-	435 465 500 570	13.7* 8.2-13.3 3.1-9.5 0-3.6	150 250 350	14.9-15 14.5-14.8 13.8-14.2

\* Begin of governing between 440-460 mm WG by adding washers WMS 22 S 18..19 X under governor spring.  
During Control Rod Travel Test (Column 4-11) n = 500 r. p. m.

## C. Adjustment of Injection Pump with Mounted Governor

0	1	2	3	4	5	6	7	8	9
Injection Pump	Adjustment of Full-Load Stop Screw			Testing of Feed Quantity Characteristics			Adjustment of Idling Stop		
	r. p. m.	Vacuum mm Water Col.	cm <sup>3</sup> /1000 strokes	r. p. m.	Vacuum mm Water Col.	cm <sup>3</sup> /1000 strokes	r. p. m.	Vacuum mm Water Col.	Control Path from Full Load to Idling Load mm
RS 14	2000	430-435	33.5-34.5	1600 1000 250	300 100 ap. 480	32-34 32.5-34.5 5-11 deviation max. 1.5			** please turn over

At full load setting (col. 3 and 6) individual measurements 1000 strokes  
All test values apply only for BOSCH Injection Test Stands.

**\*\* Adjustment of Idling Stop**

At 500 rpm and with governor stop cam disengaged set control rod to full load position by increasing WG to 430–435 mm (accurately) and measure control rod travel obtained. Increase control rod travel still further until control rod has adjusted to 3.5 mm less control rod travel than at full load position measured at 430–435 mm WG. In this position move stop cam slowly up to end position watching control rod during the process.

With spring cage correctly set the control rod should now adjust to a control rod travel  $2.0 \pm 0.5$ , with RS 14 z to  $2.0 \pm 0.5$  mm, resp., less than in full load position measured at 430–435 mm WG. If the adjusted value is higher or lower the position of the spring bolt in the spring cage should be changed by placing the required washers between the spring bolt collar and the lock washer.

**Attention please:** This change will also change the pre-tension in the spring cage. By placing washers between spring and spring bolt bottom end the pre-tension will be brought back to the specified value of 50–90 grams.

RS 14 z with .. M 12 d ... M 13 d Adjust delivery of equal quantities within outlined <input type="checkbox"/> limits										
<b>B. Adjustment of Governor</b>										
1	2	3	4	5	6	7	8	9	10	11
Compensating Path mm	Tightness		Adjusting Point Control Rod Travel		Adjustment Supplementary Spring		Control Rod Travel Test		Compensation	
	Vacuum Drop mm Water Col.	Time sec.	Vacuum mm Water Col.	Control Path mm	Vacuum mm WC	Control Path mm	Vacuum mm Water Col.	Control Path mm	Vacuum mm Water Col.	Control Path mm
1.2+0.1	500–480	10	–	—	–	–	430 465 500 575	12.8* 7.2–12 2.8–8.2 0–2.5	150 250 350 430	14.0–14.1 13.6–13.9 12.9–13.3 12.8
* Begin of governing between 440–460 mm WG by adding washers WMS 22 S 18 .. 19 X under governor spring. During Control Rod Travel (Column 4–11) n = 500 r. p. m.										
<b>C. Adjustment of Injection Pump with Mounted Governor</b>										
0	1	2	3	4	5	6	7	8	9	
Injection Pump	Adjustment of Full-Load Stop Screw			Testing of Feed Quantity Characteristics			Adjustment of Idling Stop			
	r. p. m.	Vacuum mm Water Col.	cm <sup>3</sup> /1000 strokes	r. p. m.	Vacuum mm Water Col.	cm <sup>3</sup> /1000 strokes	r. p. m.	Vacuum mm Water Col.	Control Path from Full Load to Idling Load mm	
RS 14 z	2000	430–435	30.5–31.5	1600	300	29–31			** please see above	
				1000	100	29.5–31.5				
				250	ap. 480	5–11				
deviation max. 1.5										
At full load setting (column 3 and 6) individual measurement 1000 strokes All test values apply only for BOSCH Injection Test Stands.										