

# INJECTION PUMP TEST SPECIFICATIONS

096000-9370

<b>INJECTION PUMP</b>	096000-937# (VE4/10F2500RND937)	<b>MANU-FACTURER</b>	TOYOTA																																				
<b>Governor Type</b>	Maximum-minimum speed	<b>ENGINE TYPE</b>	2C-L																																				
<b>Rated Voltage</b>	12V	<b>VEHICLE MODEL</b>	COROLLA																																				
<b>Rotation</b>	Clockwise viewed from drive side	Dimension (mm) MS	: 0.43 – 0.63																																				
<b>Injection Order</b>	A – B – C – D	Dimension (mm) K	: 3.20 – 3.40																																				
<b>Injection Interval</b>	90° ±30'	Dimension (mm) KF	: 5.20 – 5.40																																				
<p><b>1. TEST CONDITIONS</b></p> <p>1) Nozzle : 093400-0540 (DN12SD12A)      4) Feed Pressure : 0.2 kgf/cm<sup>2</sup></p> <p>2) Nozzle Opening Pressure : 149 – 151 kgf/cm<sup>2</sup>      5) High Pressure Pipe : 12 x 16 x 840 mm</p> <p>3) Test Oil : SAE J967 (ISO4113)      6) Fuel Temperature : 40 – 45°C (104 – 113°F)</p> <p><b>NOTE:</b> Apply 6 volts DC across the fuel cut solenoid during adjustment.</p> <p><b>2. PRE-ADJUSTMENT</b> (at full lever position)</p> <table border="1"> <thead> <tr> <th></th> <th>Pump Speed (rpm)</th> <th>Fuel Delivery (cc/200st· 1cyl.)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td><b>Full Load</b></td> <td>1500</td> <td>7.83 – 8.57</td> <td>By full load setting screw</td> </tr> <tr> <td><b>High Speed</b></td> <td>2700</td> <td>1.80 – 3.40</td> <td>By max. speed setting screw</td> </tr> </tbody> </table> <p>Load Sensing Timer: Adjust the governor shaft so that the dimension "L" between the housing flange and the end of the governor shaft is about 2.5 mm.</p> <p><b>3. ADJUSTMENT OF PUMP INTERNAL PRESSURE</b> (at full lever position)</p> <table border="1"> <thead> <tr> <th>Pump Speed (rpm)</th> <th>Internal Pressure (kgf/cm<sup>2</sup>)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>600</td> <td>2.70 – 3.30</td> <td rowspan="2">By the regulating valve</td> </tr> <tr> <td>2100</td> <td>6.47 – 7.07</td> </tr> </tbody> </table> <p><b>4. OVERFLOW QUANTITY CHECK</b> (at full lever position)</p> <table border="1"> <thead> <tr> <th>Pump Speed (rpm)</th> <th>Overflow Quantity (cc/1000st)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>2100</td> <td>167.0 – 364.0</td> <td>The overflow valve belonging to the pump should be used for checking.</td> </tr> </tbody> </table> <p><b>5. ADJUSTMENT OF TIMER</b> (at full lever position)</p> <table border="1"> <thead> <tr> <th>Pump Speed (rpm)</th> <th>600</th> <th>1500</th> <th>2100</th> <th></th> </tr> </thead> <tbody> <tr> <td><b>Piston Travel (mm)</b></td> <td>0.63 – 1.63</td> <td>4.69 – 5.69</td> <td>7.39 – 8.39</td> <td></td> </tr> </tbody> </table> <p><b>NOTE:</b> Hysteresis at each pump speed is less than 0.3 mm.</p>					Pump Speed (rpm)	Fuel Delivery (cc/200st· 1cyl.)	Remarks	<b>Full Load</b>	1500	7.83 – 8.57	By full load setting screw	<b>High Speed</b>	2700	1.80 – 3.40	By max. speed setting screw	Pump Speed (rpm)	Internal Pressure (kgf/cm <sup>2</sup> )	Remarks	600	2.70 – 3.30	By the regulating valve	2100	6.47 – 7.07	Pump Speed (rpm)	Overflow Quantity (cc/1000st)	Remarks	2100	167.0 – 364.0	The overflow valve belonging to the pump should be used for checking.	Pump Speed (rpm)	600	1500	2100		<b>Piston Travel (mm)</b>	0.63 – 1.63	4.69 – 5.69	7.39 – 8.39	
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6. ADJUSTMENT OF FUEL DELIVERY					
Lever Position	Pump speed (rpm)	Fuel Delivery (cc/200st, 1cyl)	Max. Spread In Delivery (cc)	Boost Pressure Absolute Pressure (mmHg)	Remarks
FULL	1500	8.03 – 8.37	0.4	—	By full load setting screw
	2700	2.00 – 3.20	—	—	By max. speed setting screw
	2600	4.50 – 6.30	—	—	
	2950	Less than 0.7	—	—	
	100	8.60 – 13.40	1.2	—	By governor sleeve plug
	500	6.71 – 7.61	0.5	—	
2350	6.83 – 7.73	0.5	—		
2500	5.98 – 7.23	0.5	—		
—	—	—	—	—	
7. SETTING OF LOAD SENSING TIMER (at full lever position)					
	Pump Speed (rpm)	Fuel Delivery (cc/200st, 1cyl)	Remarks		
Start of Load Sensing	1500	Full-load delivery – (0.7 – 1.3)	By governor shaft		
End of Pressure Drop	1500	Full-load delivery – (2.2 – 2.8)	Check		
<b>CHECK POINTS</b> 1. Change of Piston Travel : 2.16 – 2.76 mm (pump speed 1500 rpm) 2. Dimension of Governor Shaft : L = 0.5 – 2.0 mm					
8. SETTING OF ADJUSTING LEVER AT LOW SPEED (at idle lever position)					
Lever Position	Pump Speed (rpm)	Fuel Delivery (cc/500st, 1cyl)	Max. Spread In Delivery (cc)	Remarks	
IDLE	400	A = 4.63 – 6.88	—	Presetting	
	375	More than (A + 1.25)	—		
	475	A – (3.0 – 5.5)	—		
	650	B + (0.125 – 0.625)	—	Dash pot adjustment	
	1300	Less than 0.5	—		
9. ADJUSTMENT OF BOOST COMPENSATOR <span style="float: right;">N.A. : Not Applicable</span>					
Pump Speed (rpm)	Boost Pressure (mmHg)	Fuel Delivery (cc/1000st, 1cyl)	Remarks		
N.A.	N.A.	N.A.			
10. ADJUSTMENT OF T.C.V. (with no power supply to T.C.V.) <span style="float: right;">N.A. : Not Applicable</span>					
Pump Speed (rpm)	Boost Pressure (mmHg)	Piston Stroke (mm)			
N.A.	N.A.	N.A.			

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<b>11. ADJUSTMENT OF THROTTLE POSITION SENSOR</b>				N.A. : Not Applicable
	<b>Pump Speed (rpm)</b>	<b>Condition</b>		<b>Sensor Output Voltage</b>
<b>Set point</b>	N.A.	N.A.		N.A.
<b>Check point</b>	N.A.	N.A.		N.A.
<b>12. CHARACTERISTIC OF A.C.S.D.</b>				
<b>Lever Position</b>	<b>Pump Speed (rpm)</b>	<b>Fuel Temperature (°C)</b>	<b>Measuring Value</b>	<b>Remarks</b>
IDLE	400	24 – 26	Piston Travel (mm) : 0.74 – 1.14	
	400	24 – 26	Idle-up Quantity (cc/500st) : A + (1.5 – 2.5)	
<b>13. ADJUSTMENT OF POWER CONTROL</b> (Adjustment should be done while the power control lever is in contact with the stopper.)				N.A. : Not Applicable
<b>Lever Position</b>	<b>Pump Speed (rpm)</b>	<b>Boost Pressure (mmHg)</b>	<b>Fuel Delivery (cc/200st. 1cyl)</b>	<b>Remarks</b>
FULL	N.A.	N.A.	N.A.	By stopper screw
<b>14. ADJUSTMENT OF DASH POT</b>				N.A. : Not Applicable
<b>Pump Speed (rpm)</b>	<b>Boost Pressure (mmHg)</b>	<b>Fuel Delivery (cc/500st)</b>	<b>Remarks</b>	
N.A.	N.A.	N.A.		
<b>15. FINAL CHECK AFTER ADJUSTMENT</b>				
<p>(1) Range of lever angle between idle and full lever position is 47° ±5°.</p> <p>(2) Resistance of pick-up tachometer must be 650 – 970 ohms.</p>				