

INJECTION PUMP TEST SPECIFICATIONS

096000-1491

INJECTION PUMP	096000-149# (VE4/9F2200RND149)		MANU-FACTURER	TOYOTA												
Governor Type	All speed		ENGINE TYPE	2L												
Rated Voltage	12V		VEHICLE MODEL	HILUX/4RUNNER												
Rotation	Clockwise viewed from drive side		Dimension (mm) MS : -													
Injection Order	A - B - C - D		Dimension (mm) K : 3.20 - 3.40													
Injection Interval	90° ±30'		Dimension (mm) KF : 5.50 - 5.70													
1. TEST CONDITIONS																
<table border="0"> <tr> <td>1) Nozzle</td> <td>: 093400-0540 (ND-DN12SD12A)</td> <td>4) Feed Pressure</td> <td>: 0.2 kgf/cm²</td> </tr> <tr> <td>2) Nozzle Opening Pressure</td> <td>: 145 - 155 kgf/cm²</td> <td>5) High Pressure Pipe</td> <td>: ø2 x ø6 x 840 mm</td> </tr> <tr> <td>3) Test Oil</td> <td>: SAE J967 (ISO4113)</td> <td>6) Fuel Temperature</td> <td>: 40 - 45°C (104 - 113°F)</td> </tr> </table>					1) Nozzle	: 093400-0540 (ND-DN12SD12A)	4) Feed Pressure	: 0.2 kgf/cm ²	2) Nozzle Opening Pressure	: 145 - 155 kgf/cm ²	5) High Pressure Pipe	: ø2 x ø6 x 840 mm	3) Test Oil	: SAE J967 (ISO4113)	6) Fuel Temperature	: 40 - 45°C (104 - 113°F)
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NOTE: Apply 6 volts DC across the fuel cut solenoid during adjustment.																
2. PRE-ADJUSTMENT (at full lever position)																
	Pump Speed (rpm)	Fuel Delivery (cc/200st· 1cyl.)	Remarks													
Full Load	1200	9.0 - 10.0	By full load setting screw													
High Speed	2450	3.6 - 5.6	By max. speed setting screw													
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.																
3. ADJUSTMENT OF PUMP INTERNAL PRESSURE (at full lever position)																
	Pump Speed (rpm)	Internal Pressure (kgf/cm²)	Remarks													
	500	2.4 - 3.1	By the regulating valve													
	2100	6.5 - 7.1														
4. OVERFLOW QUANTITY CHECK (at full lever position)																
	Pump Speed (rpm)	Overflow Quantity (cc/1000st)	Remarks													
	2200	167 - 364	The overflow valve belonging to the pump should be used for checking.													
5. ADJUSTMENT OF TIMER (at full lever position)																
Pump Speed (rpm)	800	1200	2000	2300												
Piston Travel (mm)	0.8 - 1.6	2.4 - 3.2	5.6 - 6.4	6.35 - 7.15												
NOTE: Hysteresis at each pump speed is less than 0.3 mm.																

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	1200	9.3 – 9.7	0.4	—	By full load setting screw
	2450	3.8 – 5.4	—	—	By max. speed setting screw
	2250	6.8 – 8.0	—	—	Check
	2700	Less than 1.3	—	—	Check
	100	8.6 – 13.4	0.8	—	By governor sleeve plug
	350	7.7 – 10.3	0.5	—	Check
	500	7.2 – 8.2	0.5	—	Check
2100	7.6 – 8.5	0.5	—	Check	
—	—	—	—	—	
7. SETTING OF LOAD SENSING TIMER N.A. : Not Applicable					
	Pump Speed (rpm)	Fuel Delivery (cc/200st, 1cyl)	Remarks		
Start of Load Sensing	2100	Full-load delivery – (1.0 – 1.8)	By governor shaft		
End of Pressure Drop	1200	more than 6.2	Check		
CHECK POINTS 1. Change of Piston Travel : 1.2 – 1.6 mm (pump speed 1200 rpm) 2. Dimension of Governor Shaft : L = 1.0 – 2.0 mm					
8. SETTING OF ADJUSTING LEVER AT LOW SPEED					
Lever Position	Pump Speed (rpm)	Fuel Delivery (cc/500st, 1cyl)	Max. Spread In Delivery (cc)	Remarks	
IDLE	350	A = 3.3 – 5.8	0.9	By idle setting screw	
	525	Less than 0.8	—		
9. ADJUSTMENT OF BOOST COMPENSATOR N.A. : Not Applicable					
Pump Speed (rpm)	Boost Pressure (mmHg)	Fuel Delivery (cc/200st, 1cyl)	Remarks		
N.A.	N.A.	N.A.			
10. ADJUSTMENT OF T.C.V. (with no power supply to T.C.V.) N.A. : Not Applicable					
Pump Speed (rpm)	Boost Pressure (mmHg)	Piston Stroke (mm)			
N.A.	N.A.	N.A.			

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11. ADJUSTMENT OF THROTTLE POSITION SENSOR. (Applying 5.0 ±0.005V to sensor.)				N.A.: Not Applicable
	Pump Speed (rpm)	Condition		Sensor Output Voltage
Set point	N.A.	N.A.		N.A.
Check point	N.A.	N.A.		N.A.
12. CHARACTERISTIC OF A.C.S.D.				N.A. : Not Applicable
Lever Position	Pump Speed (rpm)	Fuel Temperature (°C)	Measuring Value	Remarks
IDLE	N.A.	N.A.	N.A.	
	N.A.	N.A.	N.A.	
13. ADJUSTMENT OF POWER CONTROL (Adjustment should be done while the power control lever is in contact with the stopper.)				N.A. : Not
Applicable				
Lever Position	Pump Speed (rpm)	Boost Pressure (mmHg)	Fuel Delivery (cc/200st. 1cyl)	Remarks
FULL	N.A.	N.A.	N.A.	
14. ADJUSTMENT OF DASH POT				N.A.: Not
Applicable				
Pump Speed (rpm)	Boost Pressure (mmHg)	Fuel Delivery (cc/500st)	Remarks	
N.A.	N.A.	N.A.		
15. FINAL CHECK AFTER ADJUSTMENT				
<p>(1) Range of lever angle between idle and full lever position is 46° ±3°.</p> <p>(2) After adjustment has been completed, confirm that there is no injection when voltage at fuel cut solenoid is reduced to zero (pump speed Np =100 rpm).</p> <p>(3) Resistance of pick-up for tachometer must be 600 – 800 ohms.</p>				