

INJECTION PUMP TEST SPECIFICATIONS

096000-5920

MANUFACTURER	TOYOTA		INJECTION PUMP		096000-592#			
ENGINE TYPE	2L-T		VE4/10F2100RND592					
VEHICLE MODEL	CROWN	ROTATION	Clockwise viewed from drive side	GOVERNOR TYPE	Maximum-minimum speed			
RATED VOLTAGE	12V	INJECTION ORDER	A - B - C - D	INJECTION INTERVAL	90° ± 30'			
Dimension KF (mm)	6.10 ± 0.10		Dimension MS (mm)	0.30 ± 0.10				
Dimension K (mm)	3.30 ± 0.10		Dimension PS (mm)	—				
1. TEST CONDITIONS								
Nozzle	093400-0540 (DN12SD12A)		Feed Pressure	19.6 kPa (0.2 kgf/cm ²)				
Nozzle Opening Pressure	14.7 ± 0.5 MPa (150 ± 5 kgf/cm ²)		High Pressure Pipe	Ø2 × Ø6 × 840 mm				
Test Oil	SAE J967 (ISO4113)		Fuel Temperature	40 - 45 °C (104 - 113°F)				
NOTE : Apply 6 volts DC across the fuel cut solenoid during adjustment.								
2. PRE-ADJUSTMENT								
	Lever Position (deg)	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Max. Spread in Delivery	
			(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)	(mm ³)	(cc)
Full Load	28.5 ± 5° (Full)	1400	66.7	500	70.5 ± 0.5	14.1 ± 0.1	2.0	0.4
High Speed		2450	66.7	500	26.5 ± 4.0	5.3 ± 0.8	—	—
3. ADJUSTMENT OF INTERNAL PRESSURE								
Lever Position	Pump Speed (rpm)	Boost Pressure		Internal Pressure		Remarks		
		(kPa)	(mmHg)	(kPa)	(kgf/cm ²)			
Full	500	66.7	500	343.2 ± 29.4	3.5 ± 0.3	By the regulating valve		
	2300	66.7	500	715.9 ± 29.4	7.3 ± 0.3			
4. OVERFLOW QUANTITY CHECK								
Lever Position	Pump Speed (rpm)	Boost Pressure		Overflow Quantity		Remarks		
		(kPa)	(mmHg)	(L/h)	(cc/1000st)			
Full	2200	66.7	500	22 - 48	167 - 364			
NOTE : The overflow valve belonging to the pump should be used checking.								
5. ADJUSTMENT OF TIMER								
Lever Position	Pump Speed (rpm)	Boost Pressure		Piston Travel (mm)	Remarks			
		(kPa)	(mmHg)					
Full	800	66.7	500	1.60 ± 0.40				
	1200	66.7	500	2.90 ± 0.40				
	2000	66.7	500	5.70 ± 0.30				
	2300	66.7	500	5.70 ± 0.30				
NOTE : Hysteresis at each pump speed is less than 0.3 mm.								

6. ADJUSTMENT OF BOOST COMPENSATOR								
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Max. Spread in Delivery		Remarks
		(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)	(mm ³)	(cc)	
Full	1400	66.7	500	70.5 ± 0.5	14.1 ± 0.1	2.0	0.4	
	1400	- 26.7	- 200	47.0 ± 2.5	9.4 ± 0.5	—	—	
	1400	73.3	550	70.5 ± 1.0	14.1 ± 0.2	—	—	
	1400	106.5	800	Less than 68.0	Less than 13.6	—	—	
	500	0	0	56.0 ± 1.5	11.2 ± 0.3	4.0	0.8	
	500	40.0	300	75.0 ± 1.5	15.0 ± 0.3	—	—	
7. ADJUSTMENT OF FUEL DELIVERY								
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Max. Spread in Delivery		Remarks
		(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)	(mm ³)	(cc)	
Full	1400	66.7	500	70.5 ± 0.5	14.1 ± 0.1	2.0	0.4	By full load setting screw
	2450	66.7	500	26.5 ± 4.0	5.3 ± 0.8	—	—	By max. speed setting screw
Full / Idle	2250	66.7	500	47.0 ± 5.0	9.4 ± 1.0	—	—	
	2750	66.7	500	Less than 5.0 / 1.0	Less than 1.0 / 0.2	—	—	
	100	0	0	80.0 ± 10.0	16.0 ± 2.0	6.0	1.2	By governor sleeve plug
	1200	66.7	500	72.0 ± 3.0	14.4 ± 0.6	2.5	0.5	
	1800	66.7	500	65.0 ± 3.0	13.0 ± 0.6	2.5	0.5	
	2000	66.7	500	61.0 ± 2.5	12.2 ± 0.5	2.5	0.5	
	1200	0	0	A	A	—	—	A = Measurement
8. SETTING OF LOAD SENSING TIMER								
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Remarks		
		(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)			
Start of Load Sensing	1200	0	0	(A - 3.0) ± 2.0	(A - 0.6) ± 0.4	By governor shaft		
End of Pressure Drop	1200	0	0	41.5 ± 1.0	8.3 ± 0.2	Check		
Repeat Advance Angle								
Check Points	1. Change of Piston Travel : 1.95 ± 0.30 mm (Pump speed 1200 rpm) 2. : mm 3. Dimension of Governor Shaft : L = 1.25 ± 0.75 mm							

9. SETTING OF ADJUSTING LEVER AT LOW SPEED							
Lever Position (deg)	Pump Speed (rpm)	Boost Pressure (kPa)	Fuel Delivery		Max. Spread in Delivery		Remarks
			(mm ³ /st)	(cc/500st)	(mm ³)	(cc)	
- 17.5 ± 4° (Idle)	400	0 (0 mmHg)	18.0 ± 0.5 = B	9.0 ± 0.3 = B	—	—	Presetting
	475	0 (0 mmHg)	(B - 9.0) ± 2.5	(B - 4.5) ± 1.3	—	—	By Idle screw
	450	0 (0 mmHg)	C	C	—	—	C = Measurement
	375	0 (0 mmHg)	More than C ± 2.5	More than C ± 1.3	—	—	By Idle screw
	600	0 (0 mmHg)	3.0 ± 0.5 = D	1.5 ± 0.3 = D	—	—	Presetting, D = Measurement
	600	0 (0 mmHg)	(D + 1.0) ± 0.5	(D + 0.5) ± 0.3	—	—	D/P adjustment (screw tightened)
	400	0 (0 mmHg)	18.5 ± 1.5	9.3 ± 0.8	1.7	0.9	Lever setting
10. SETTING OF ADJUSTING LEVER AT PARTIAL RANGE — : Not Applicable							
Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Remarks		
	(kPa)	(mmHg)	(mm ³ /st)	(cc/500st)			
—	—	—	—	—	—		
11. CHARACTERISTIC OF A.C.S.D.							
Lever Position	Pump Speed (rpm)	Boost Pressure		Measuring Value	Remarks		
		(kPa)	(mmHg)				
Idle	400	0	0	0 mm	Piston Travel		
	400	0	0	3.0 mm ³ /st	Idle-up Quantity (1.5 cc/500st)		
Fuel temperature : 39 - 41°C (102 - 106°F)							
12. ADJUSTMENT OF T.C.V. — : Not Applicable							
Lever Position	Pump Speed (rpm)	Boost Pressure		Piston Travel (mm)	Remarks		
		(kPa)	(mmHg)				
—	—	—	—	—	—		
13. SETTING OF DIAPHRAGM FOR HEATER & POWER STEERING — : Not Applicable							
Pump Speed (rpm)	Vacuum Pressure		Fuel Delivery		Remarks		
	(kPa)	(mmHg)	(mm ³ /st)	(cc/500st)			
—	—	—	—	—	—		
14. ADJUSTMENT OF POWER CONTROL — : Not Applicable							
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Remarks	
		(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)		
—	—	—	—	—	—	—	

15. ADJUSTMENT OF THROTTLE POSITION SENSOR						Applying 5 ± 0.005 V to sensor.	
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Sensor Output Voltage (V)	Remarks
		(kPa)	(mmHg)	(mm ³ /st)	(cc/500st)		
—	750	0	0	20.0 ± 0.4	10.0 ± 0.2	3.363 ± 0.024	Set point
Idle	0	0	0	—	—	3.965 ± 0.465	Check point
Full	0	0	0	—	—	Less than 0.2	Check point

16. FINAL CHECK AFTER ADJUSTMENT
<ol style="list-style-type: none"> 1. Range of lever angle between idle and full lever position is $46 \pm 3^\circ$. 2. Resistance of pick-up tachometer must be 810 ± 160 ohms. 3. After adjustment has been completed, delivery quantity must be 0 mm³/st (0 cc/200st) when voltage at fuel cut solenoid is reduced to zero. (Pump Speed Np = 100 rpm)