

# INJECTION PUMP TEST SPECIFICATIONS

096500-2000

INJECTION PUMP	096500-2000 (VE4/10E2400RND200)	MANUFACTURER	TOYOTA
ENGINE TYPE	2C-TE	VEHICLE MODEL	CORONA
Governor Type	Electronic control	Timer	Electronic control
Injection Order	A - B - C - D	Injection Interval	90°
Rotation	Clockwise viewed from drive side	Rated Voltage	14 V
Dimension KF (mm)	5.40 ± 0.10	Dimension K (mm)	3.30 ± 0.10
Pump Select Switch No. (ECD Controller)	7		

## 1. TEST CONDITIONS

1) Nozzle	093400-2370 (DN12SD12A)	4) Feed Pressure	0.2 kg/cm <sup>2</sup>
2) Nozzle Opening Pressure	150 ± 2 kg/cm <sup>2</sup>	5) High Pressure Pipe	Ø2 × Ø6 × 840 mm
3) Test Oil	SAE J967 (ISO4113)	6) Fuel Temperature	40 - 43 °C (104 - 109.4 °F)

## 2. BREAK-IN DRIVE

Pump Speed (rpm)	ECD CONTROLLER SETTING				Condition	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
1200	SPEED	Less than 50B	—	—	No fuel leaks, no abnormal noise, and no abnormal temperature rising.	Drive more than 5 minutes.

## 3. INSPECTION OF FUEL TEMPERATURE SENSOR

Pump Speed (rpm)	ECD CONTROLLER SETTING				Sensor Resistance (kΩ)	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
—	Fuel Temperature	—	—	—	1.85 ± 1.5	

## 4. INSPECTION OF Ne SENSOR

Pump Speed (rpm)	ECD CONTROLLER SETTING				Sensor Output Voltage (V)	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
50	Np	—	—	—	0.1 or more	

## 5. ADJUSTMENT OF PUMP INTERNAL PRESSURE

Pump Speed (rpm)	ECD CONTROLLER SETTING				Internal Pressure (kg/cm <sup>2</sup> )	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
2000	SPEED	430	0	—	8.75 ± 0.15	By the regulating valve
100	SPEED	595	0	—	2.00 or more	

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**6. OVERFLOW QUANTITY CHECK**

Pump Speed (rpm)	ECD CONTROLLER SETTING				Overflow Quantity (cc/1000st)	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
2000	SPEED	430	0	—	167 - 267	The overflow valve belonging to the pump should be used for checking.

**7. ADJUSTMENT OF TIMER**

Pump Speed (rpm)	ECD CONTROLLER SETTING				Timer Stroke (mm)	Remarks
	Display Selector	Injection Quantity Command	Duty Ratio Command	FCV Switch		
2000	SPEED	430	0 50	— —	10.30 ± 0.24 4.70 ± 3.50	
700	SPEED	4C8	0 100	— —	10.30 ± 0.24 0	
200	SPEED	595	0	—	3.60 or more	
100	SPEED	595	0	—	0.40 or more	

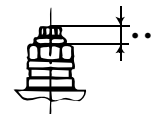
**8. SPV SCREW SETTING**

Pump Speed (rpm)	ECD CONTROLLER SETTING					Target Quantity [ND-CPS] (cc/200st)	Target Quantity EPS (cc/200st-cyl.)	Remarks
	Display Selector	Injection Quantity Command			Duty Ratio Command			
		First digit	Second digit	Third digit				
350	Adjust	0	0	0	0	1.80 ± 0.20	1.54 ± 0.20	Adjust 2nd. and 3rd. digits to get "Target Quantity"
350	Adjust	0	<input type="checkbox"/>	<input type="checkbox"/>	0	1.80 ± 0.20	1.54 ± 0.20	Record the final correction value " <input type="checkbox"/> <input type="checkbox"/> "
2000	Adjust	1	<input type="checkbox"/>	<input type="checkbox"/>	0	11.60 ± 0.20	10.73 ± 0.20	Adjust SPV screw to get "Target Quantity"

NOTE1 : Select "Record" position every time when recording the final correction value.

NOTE2 : When the correction value is raised by 1 level, the injection quantity is increased approx. 0.04 - 0.06 cc/200st.

NOTE3 : Keep the height of the SPV screw (shown in the figure) at 3.0 - 5.2 mm



**9. PRESETTING FOR CAM ANGLE ADJUSTMENT**

Pump Speed (rpm)	ECD CONTROLLER SETTING					Target Quantity [ND-CPS] (cc/200st)	Target Quantity EPS (cc/200st-cyl.)	Remarks
	Display Selector	Injection Quantity Command			Duty Ratio Command			
		First digit	Second digit	Third digit				
350	Adjust	2	0	0	100	3.40 ± 0.14	3.13 ± 0.14	Adjust 2nd. and 3rd. digits to get "Target Quantity"
350	Adjust	2	<input type="checkbox"/>	<input type="checkbox"/>	100	3.40 ± 0.14	3.13 ± 0.14	Record the final correction value " <input type="checkbox"/> <input type="checkbox"/> "

NOTE : Select "Record" position every time when recording the final correction value.

• When the correction value is raised by 1 level, the injection quantity is increased approx. 0.04 - 0.06 cc/200st.

**10. ADJUSTMENT OF CAM ANGLE**

Pump Speed (rpm)	ECD CONTROLLER SETTING						Target Angle (°CA)	Standard	Remarks
	Display Selector	Injection Quantity Command			Duty Ratio Command	FCV Switch			
		First digit	Second digit	Third digit					
350	Adjust	3	0	0	100	—	2.2 ± 0.5	Recorded injection command	Adjust 2nd. and 3rd. digits to get "Target Angle"
350	Adjust	3	<input type="checkbox"/>	<input type="checkbox"/>	100	—	—	—	Record the final correction value " <input type="checkbox"/> <input type="checkbox"/> "

NOTE : Never forget removing pressure sensor from piping.

**11. ADJUSTMENT OF FUEL DELIVERY**

Pump Speed (rpm)	ECD CONTROLLER SETTING			Fuel Delivery [ND-CPS] (cc/200st.cyl.)	Fuel Delivery EPS (cc/200st.cyl.)	Max. Spread In Delivery (cc)	Reference	Remarks	
	Display Selector	• First Digit	Duty Ratio Command						
100	Adjust	4	0	3.54 ± 0.24	2.83 ± 0.24	—	48C - 4D6	• When the correction value is raised by 1 level, the injection quantity is increased approx. 0.04 - 0.06 cc/200st.	
100	Adjust	5	0	12.54 ± 0.40	11.46 ± 0.40	1.20	590 - 5E2		
350	Adjust	6	0	1.80 ± 0.14	1.54 ± 0.14	0.34	43F - 47F		
350	Adjust	7	0	8.14 ± 0.24	8.23 ± 0.24	—	4E7 - 51D		
700	Adjust	8	0	4.72 ± 0.16	5.06 ± 0.16	—	447 - 479		
700	Adjust	9	0	9.62 ± 0.24	9.94 ± 0.24	0.50	4CD - 50B		
1300	Adjust	A	0	3.44 ± 0.16	4.06 ± 0.16	—	37A - 3B8		
1300	Adjust	B	0	13.08 ± 0.22	12.95 ± 0.22	0.50	4CB - 50D		
2000	Adjust	C	0	4.60 ± 0.18	4.99 ± 0.18	—	2F3 - 343		
2000	Adjust	D	0	11.60 ± 0.24	10.73 ± 0.24	0.40	43B - 46D		
1200	Confirm	E	0	5.56 ± 0.26	6.05 ± 0.26	—	—		Check
2600	Confirm	F	0	5.98 ± 0.50	5.96 ± 0.50	—	—		Check

NOTE : In case of out of standard value at check points, adjust again from "SPV screw setting" procedure.

- First Digit : First digit (The leftest of 3 digits) of "Injection Quantity Command Value" input switch.

**12. TIMING MARK RE-MARKING POSITION**

Based on cylinder : A	Cam lift distance (plunger) should be 1.30 mm
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