

INJECTION PUMP TEST SPECIFICATIONS

MANUFACTURER	KOMATSU	INJECTION PUMP		096000-2491				
ENGINE TYPE	4D95S			VE4/9F1225RND249				
VEHICLE MODEL	FORK LIFT	ROTATION	Clockwise viewed from drive side	GOVERNOR TYPE	All speed			
RATED VOLTAGE	12V	INJECTION ORDER	A - B - C - D	INJECTION INTERVAL	90° ± 30'			
Dimension KF (mm)	5.40 ± 0.10		Dimension MS (mm)	0.70 ± 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 x Ø6 x 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	17.5 ± 5°	1000	—	—	36.5 ± 0.5	7.3 ± 0.1	2.0	0.4
High Speed	(Full)	1225	—	—	36.0 ± 2.0	7.2 ± 0.4	—	—
3. ADJUSTMENT OF INTERNAL PRESSURE								
Lever Position	Pump Speed (rpm)	Boost Pressure		Internal Pressure		Remarks		
		(kPa)	(mmHg)	(kPa)	(kgf/cm ²)			
Full	400	—	—	245.2 ± 29.4	2.5 ± 0.3	By the regulating valve		
	600	—	—	284.4 ± 29.4	2.9 ± 0.3			
	1350	—	—	451.1 ± 29.4	4.6 ± 0.3			
4. OVERFLOW QUANTITY CHECK								
Lever Position	Pump Speed (rpm)	Boost Pressure		Overflow Quantity		Remarks		
		(kPa)	(mmHg)	(L/h)	(cc/1000st)			
Full	1350	—	—	12 - 27	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	600	—	—	0.40 ± 0.30				
	1000	—	—	0.90 ± 0.40				
	1350	—	—	1.50 ± 0.40				
	1225	—	—	1.30 ± 0.40				
	1500	—	—	3.10 ± 0.40				
NOTE : Hysteresis at each pump speed is less than 0.3 mm.								

6. ADJUSTMENT OF BOOST COMPENSATOR								— : Not Applicable	
Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Max. Spread in Delivery		Remarks	
		(kPa)	(mmHg)	(mm ³ /st)	(cc/200st)	(mm ³)	(cc)		
—		—	—	—	—	—	—	—	

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	1000	—	—	36.5 ± 0.5	7.3 ± 0.1	2.0	0.4	By full load setting screw
	1225	—	—	36.0 ± 2.0	7.2 ± 0.4	—	—	By max. speed setting screw
	1350	—	—	13.5 ± 2.5	2.7 ± 0.5	—	—	
	1425	—	—	Less than 1.0	Less than 0.2	—	—	
	100	—	—	65.0 ± 10.0	13.0 ± 2.0	4.0	0.8	By governor sleeve plug
	400	—	—	32.5 ± 2.5	6.5 ± 0.5	2.0	0.4	
	1150	—	—	37.5 ± 2.5	7.5 ± 0.5	2.0	0.4	
								With reverse adaptation

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	—	—	—	—	—	By governor shaft
End of Pressure Drop	—	—	—	—	—	Check
Check Points	1. — : — mm (Pump speed rpm) 2. Dimension of Governor Shaft : L = 1.50 ± 0.50 mm					

9. SETTING 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 ± 5° (Idle)	350	—	9.0 ± 2.0	4.5 ± 1.0	2.0	1.0	Lever setting
	500	—	Less than 1.0	Less than 0.5	—	—	
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)				
—	—	—	—	—	—		
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

— : Not Applicable

Lever Position	Pump Speed (rpm)	Boost Pressure		Fuel Delivery		Sensor Output Voltage VA (V)	Remarks
		(kPa)	(mmHg)	(mm ³ /st)	(cc/500st)		
—	—	—	—	—	—	—	—

16. FINAL CHECK AFTER ADJUSTMENT

- 1 . Range of lever angle between idle and full lever position is $35 \pm 5^\circ$.
- 2 . 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 N_p = 100 rpm)