

INJECTION PUMP TEST SPECIFICATIONS

196000-5080

MANUFACTURER	MITSUBISHI	INJECTION PUMP		196000-508# VE6/12F1100RND508				
ENGINE TYPE	S6S-DT							
VEHICLE MODEL	BULLDOZER	ROTATION	Clockwise viewed from drive side	GOVERNOR TYPE	All speed			
RATED VOLTAGE	12V	INJECTION ORDER	A - B - C - D - E - F	INJECTION INTERVAL	60° ± 30'			
Dimension KF (mm)	5.20 ± 0.10		Dimension MS (mm)	0.44 ± 0.05				
Dimension K (mm)	3.00 ± 0.15		Dimension PS (mm)	0.25 ± 0.02				
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 14 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	30 ± 5°	700	—	—	71.5 ± 2.0	14.3 ± 0.4	4.0	0.8
High Speed	(Full position)	1220	—	—	14.0 ± 5.0	2.8 ± 1.0	—	—
3. ADJUSTMENT OF INTERNAL PRESSURE								
Lever Position	Pump Speed (rpm)	Boost Pressure		Internal Pressure		Remarks		
		(kPa)	(mmHg)	(kPa)	(kgf/cm ²)			
Full	1100	—	—	More than 382.0	More than 3.9	By the regulating valve		
Full	1250	—	—	Less than 981.0	Less than 10.0			
Idle	325	—	—	Less than 137.0	Less than 1.4			
Idle	900	—	—	671.5 ± 29.5	6.8 ± 0.3			
4. OVERFLOW QUANTITY CHECK								
Lever Position	Pump Speed (rpm)	Boost Pressure		Overflow Quantity		Remarks		
		(kPa)	(mmHg)	(L/h)	(cc/1000st)			
Full	900	—	—	38.9 - 64.9	721 - 1202			
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	1100	—	—	Less than 0.20				
Idle	1250	—	—	2.05 ± 0.40				
Idle	800	—	—	1.30 ± 0.20				
Idle	870	—	—	2.05 ± 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	700	—	—	71.5 ± 2.0	14.3 ± 0.4	4.0	0.8	By full load setting screw
	1220	—	—	14.0 ± 5.0	2.8 ± 1.0	—	—	By max. speed setting screw
	1120	—	—	A – 5.0	A – 1.0	—	—	A = measurement (1100 rpm)
	1300	—	—	Less than 3.0	Less than 0.6	—	—	
	100	—	—	46.6 ± 12.0 = B	9.3 ± 2.4 = B	10.0	2.0	By governor sleeve plug
	180	—	—	More than B – 1.0 = C	More than B – 0.2 = C	—	—	End of fuel quantity increase
	280	—	—	Less than C – 5.0	Less than C – 1.0	—	—	
	350	—	—	29.6 ± 3.0	5.9 ± 0.6	—	—	
	550	—	—	51.8 ± 5.0	10.4 ± 1.0	—	—	
	900	—	—	74.8 ± 4.5	15.0 ± 0.9	—	—	
1100	—	—	71.7 ± 4.0	14.3 ± 0.8	—	—		

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	1100	—	—	26.5 ± 1.5	5.3 ± 0.3	By governor shaft
End of Pressure Drop	1100	—	—	17.5 ± 2.0	3.5 ± 0.4	Check
Repeat Advance Angle						
Check Points	1. Piston Travel at End of Pressure Drop : 2.05 ± 0.4 mm (Pump speed 1100 rpm) 2. : mm 3. Dimension of Governor Shaft : L = 1.15 ± 0.85 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)	
- 15 ± 5° (Idle position)	420	—	2.8 ± 1.5	1.4 ± 0.8	3.0	1.5	Lever setting
	500	—	Less than 3.0	Less than 1.5	—	—	
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. — : Not Applicable							
Lever Position	Pump Speed (rpm)	Boost Pressure		Measuring Value	Remarks		
		(kPa)	(mmHg)		—		
—	—	—	—	—	—		
Fuel temperature : 39 - 41°C							
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 (V)	Remarks
		(kPa)	(mmHg)	(mm ³ /st)	(cc/500st)		
—	—	—	—	—	—	—	—

16. FINAL CHECK AFTER ADJUSTMENT

1. Lever position at idle is $-15 \pm 5^\circ$ and $30 \pm 5^\circ$ at full.
2. After adjustment has been completed, delivery quantity must be 5.0 mm³/st (1.0 cc/200st) when voltage at fuel cut solenoid is reduced to zero. (Pump Speed N_p = 100 rpm at idle lever position)