

# INJECTION PUMP TEST SPECIFICATIONS

293000-0011

<b>INJECTION PUMP</b>	293000-001# (ND-PES4NL100A321RND001)	<b>MANU-FACTURER</b>	MITSUBISHI
<b>GOVERNOR</b>	091300-506# (R801)	<b>ENGINE TYPE</b>	4D35
<b>TIMER</b>	091800-359# (SB0)	<b>VEHICLE MODEL</b>	TRUCK

## 1.INJECTION TIMING

- |                       |                                    |                           |   |
|-----------------------|------------------------------------|---------------------------|---|
| 1) Rotation           | : Clockwise viewed from drive side | 4) Pre-stroke             | : 4.25 – 4.35<br>(At rack travel = 12.5 – 17.0mm) |
| 2) Injection Order    | : 1 – 3 – 4 – 2                    | 5) Tappet Clearance       | : More than 0.2 mm                                |
| 3) Injection Interval | : 90° ± 30'                        | 6) Locked Timing Location | : —   |

## 2.ADJUSTMENT OF DELIVERY QUANTITY

### Test Conditions

- |                            |                                 |                       |                             |
|----------------------------|---------------------------------|-----------------------|-----------------------------|
| 1) Nozzle                  | : 093400 – 0540<br>(DN12SD12A)  | 4) Feed Pressure      | : 1.6 kgf/cm <sup>2</sup>   |
| 2) Nozzle Opening Pressure | : 175 – 180 kgf/cm <sup>2</sup> | 5) High Pressure Pipe | : ø2 x ø6 x 600 mm          |
| 3) Test Oil                | : SAE J967 (ISO4113)            | 6) Fuel Temperature   | : 40 – 45 °C (104 – 113 °F) |

Pump Speed (rpm)	Rack Travel (mm)	Number of Strokes	Delivery Quantity (cc/cyl.)	Max. Spread in Delivery (cc)	Remarks
1600	15.55	200	19.7 – 21.5	1.1	
1875	11.85	200	4.3 – 5.9	0.8	
325	Approx. 12.25	500	3.5 – 6.5	1.0	
800	14.20	200	16.1 – 16.7	0.8	

Overflow valve opening : 1.6 kgf/cm<sup>2</sup>

## 3.ADJUSTMENT OF GOVERNOR...Refer to the right side of this sheet.

## 4.ADJUSTMENT OF PUMP WITH GOVERNOR OPERATION

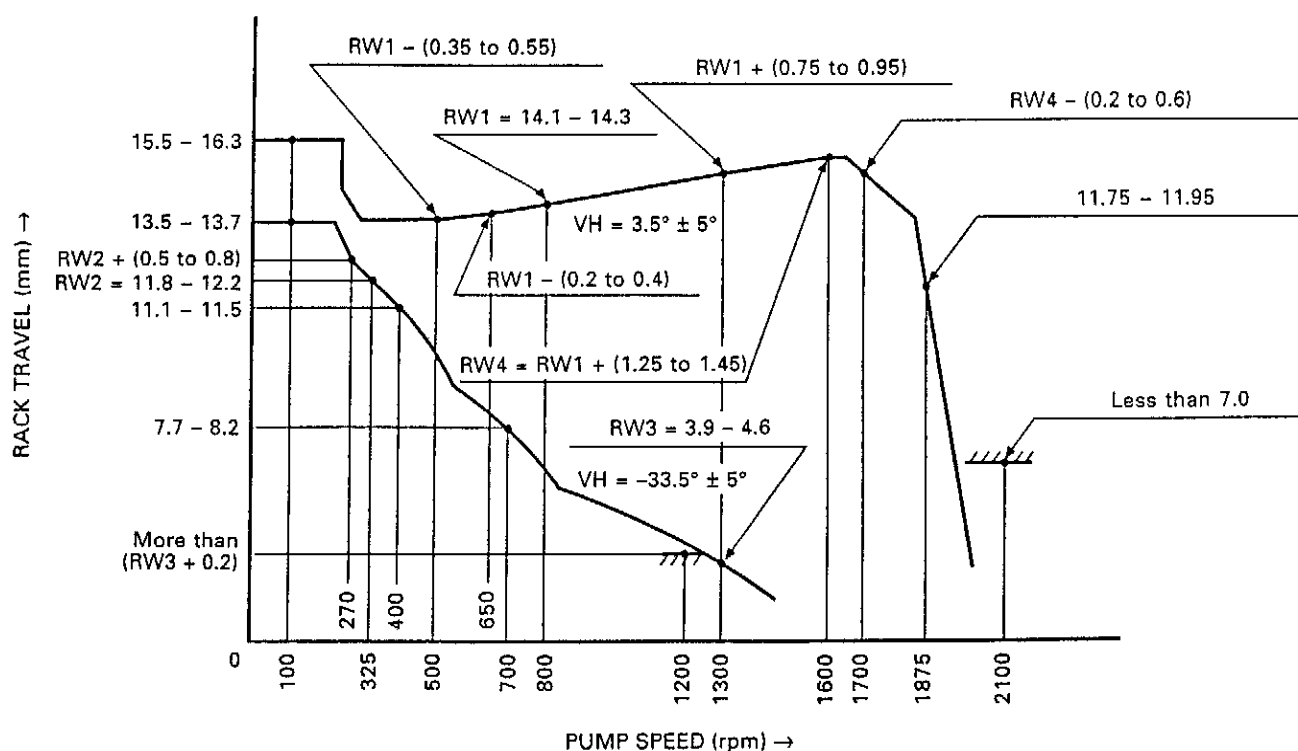
Lever Position (deg)	Pump Speed (rpm)	Number of Strokes	Delivery Quantity (cc/cyl.)	Remarks
FULL	800	1000	81.0 – 83.0	
	1600	1000	Approx. 103.0	
	500	1000	Approx. 60.0	
	650	1000	Approx. 73.5	
	1100	1000	Approx. 88.0	
	1300	1000	Approx. 95.0	
	1700	1000	Approx. 89.0	

## 5. ADJUSTMENT OF TIMER

N.A. : Not Applicable

Pump Speed (rpm)	1050 – 1200	1350 – 1650				
Advance Angle (deg)	1.2 – 1.8	5.5				

Control Speed Range : 325 – 1600 rpm



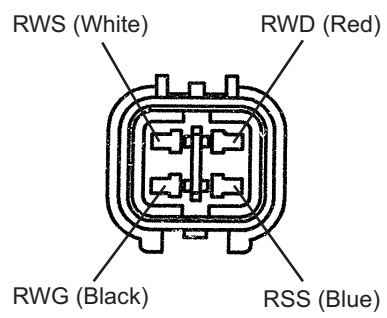
## 6. ADJUSTMENT OF BOOST COMPENSATOR (Full lever position)

Pump Speed (rpm)	Boost Pressure (mmHg)	RW (mm)	Delivery Quantity (cc/200st)
N.A.	N.A.	N.A.	N.A.

## NOTE:

- (1) Adjusting Lever Angle  
Setting position 0° to be at vertical position.
- (2) Stop Lever Operation  
Rack travel must be 1.8 – 2.2 mm when the stop lever is pulled at pump speed 500 rpm, then fuel delivery must be less than 0.9 cc/200 st-cyl.
- (3) With the adjusting lever at low speed position, set the rack with the pump speed at 325 rpm. When the pump speed is then increased to 1300 rpm and returned to 325 rpm, the distance from the original rack position should be 0.2 mm or less.
- (4) With the adjusting lever at low speed position, set the rack with the pump speed at 100 rpm. When the pump speed is then increased to 400 rpm and returned to 150 rpm, the distance from the original rack position should be 0.2 mm or less.
- (5) Temporary Adjustment of Stop Cam  
L1 = 33.5 mm L2 = 33.5 mm L3 = 25.0 mm
- (6) The 1st cylinder is on the drive side.
- (7) Check that the rack travel is 12.45 mm or more when the adjusting lever is turned to the full position with the pump speed at 1875 rpm.
- (8) Check that the rack travel is 14.5 mm or less when the adjusting lever is turned from the idle position to the full position with the pump speed at 275 rpm.
- (9) Rack Sensor Output Voltage Check  
Adjust the thickness of shims within the range of 0 – 1.0 mm so that the output voltage of the rack sensor becomes as specified in the table below.

Lever Position	Pump Speed (rpm)	Rack Travel (mm)	Output Voltage (V)	Remarks
IDLE	0	Approx. 13.6	1.86 – 2.24	By shim adjustment



Rack Sensor Connector Terminal