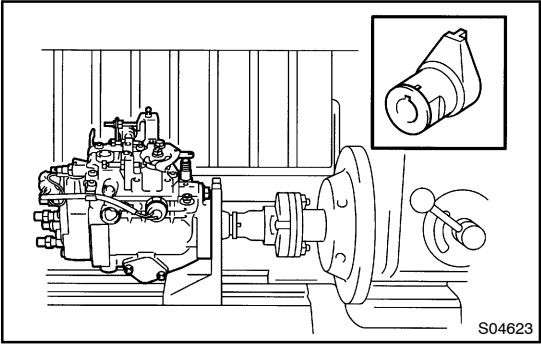




INJECTION PUMP (5L) ADJUSTMENT

FU0AL-01

1. PRE-TEST CHECK AND PREPARATION

- (a) The specifications for test nozzle and nozzle holders are as follows.

Test nozzle: DN12SD12 (DENSO)

Test nozzle opening pressure:

14,220 – 15,200 kPa

(145 – 155 kgf/cm², 2,062 – 2,205 psi)

- (b) Check the accuracy of the tachometer.

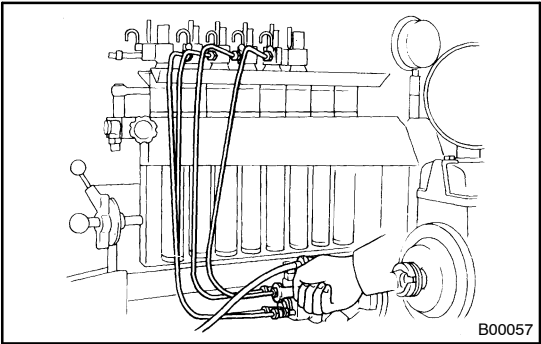
Allowable error: ± 40 rpm

- (c) Install the angle gauge stand.

- (d) Mount the injection pump body on the pump tester.

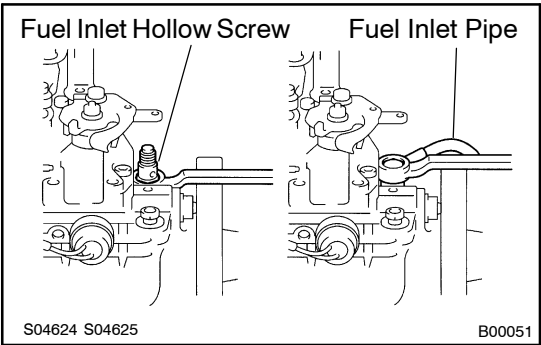
HINT:

Place a mark on the key groove portion of the coupling.



- (e) Install an injection pipe with these specifications.

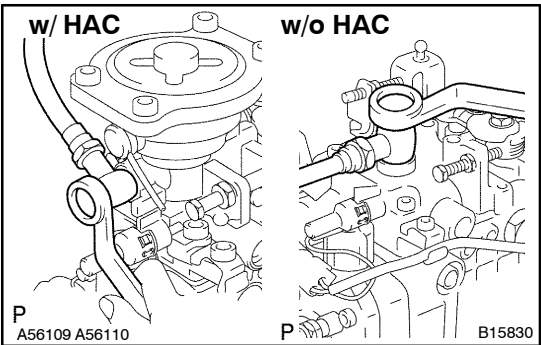
Outer diameter	6.0 mm (0.236 in.)
Inner diameter	2.0 mm (0.079 in.)
Length	840 mm (33.07 in.)
Minimum bending radius	25 mm (0.98 in.) or more



- (f) Remove the nut cap.

- (g) Connect the fuel inlet pipe with an adapter.

Torque: 26.55 N·m (260 kgf·cm, 19 ft·lbf)



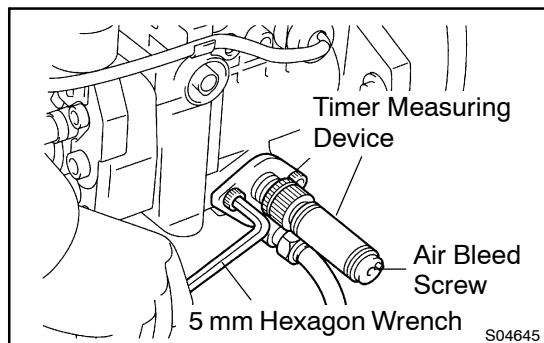
- (h) Install an overflow hose with the 2 gaskets and an overflow screw.

Torque: 26.55 N·m (260 kgf·cm, 19 ft·lbf)

HINT:

Always use the overflow screw installed on the pump to be adjusted.

- (i) Using a 5 mm hexagon wrench, remove the 2 bolts and RH timer cover.



- (j) Install the inner pressure gauge with the timer measuring device.

Part No. 95095-10231, 95095-10480 (DENSO)

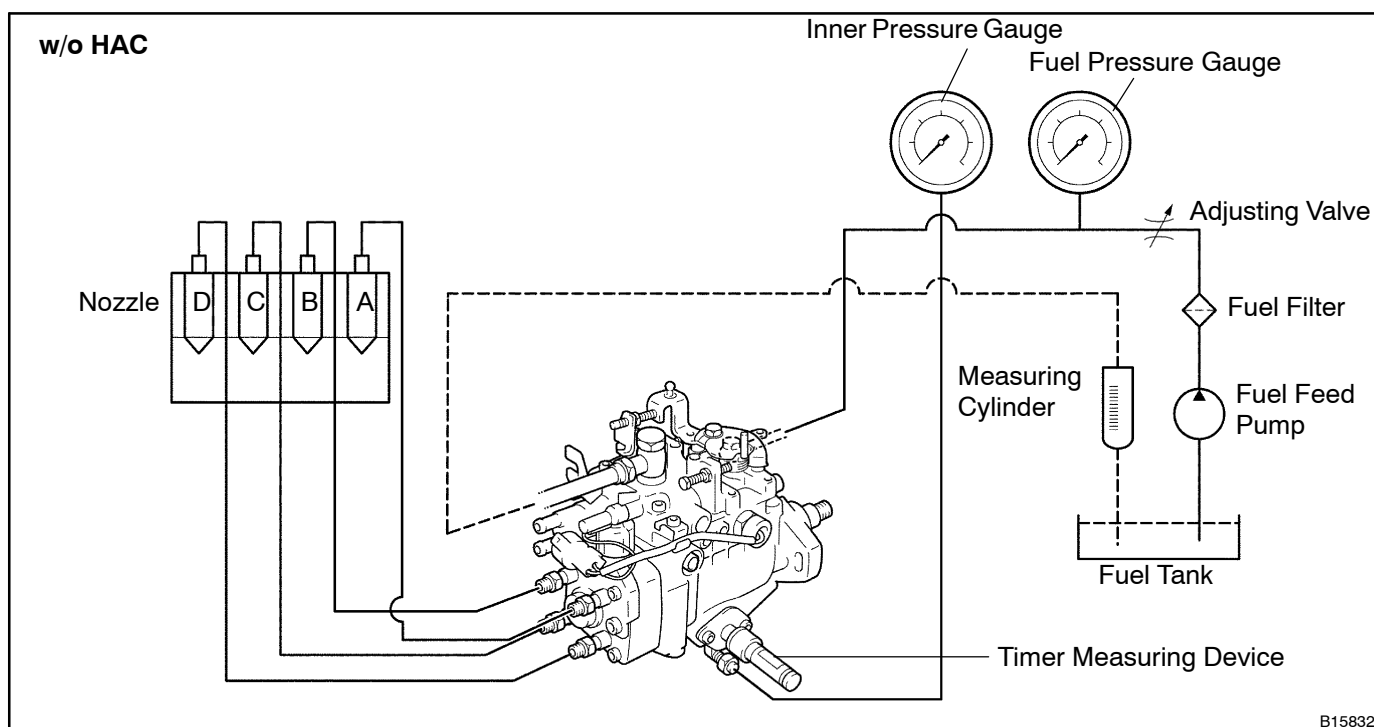
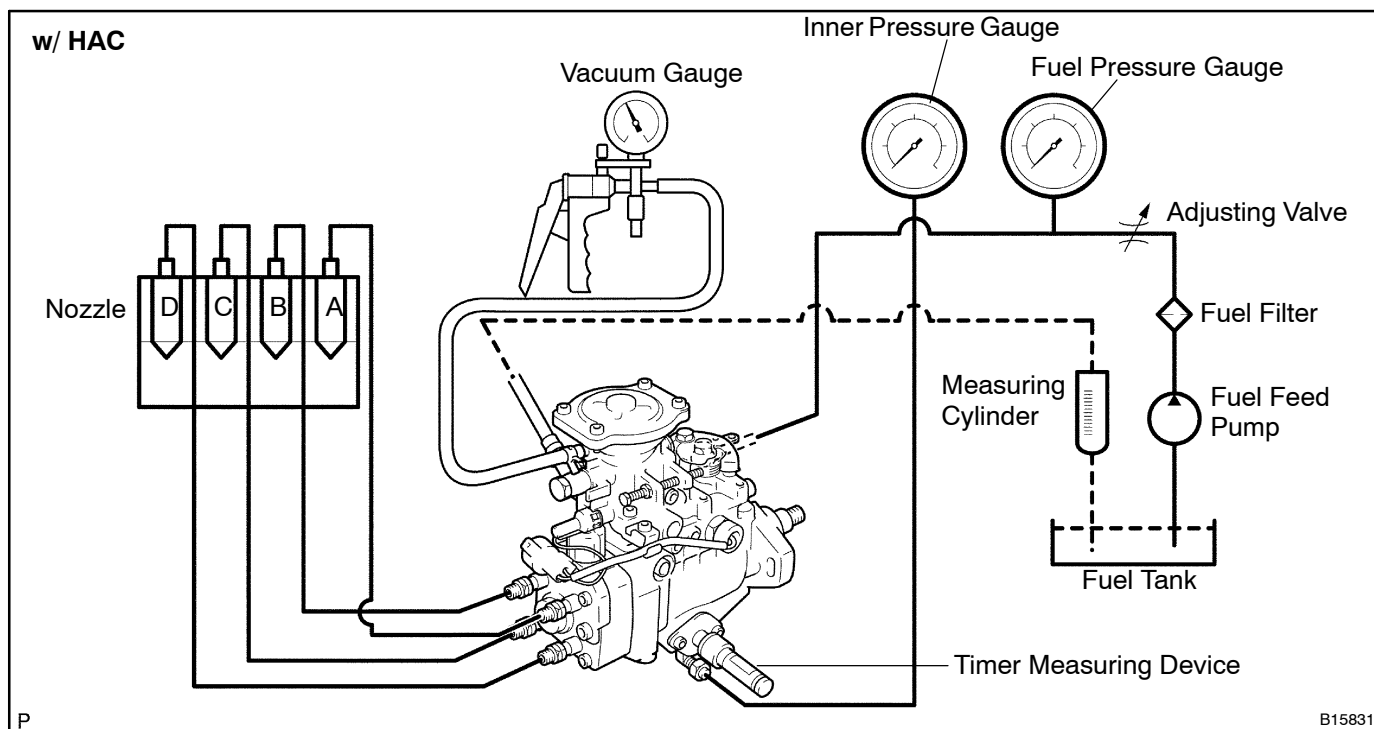
Torque: 8.35 N·m (85 kgf·cm, 74 in·lbf)

HINT:

Bleed the air by the air bleed screw.

- (k) Connect SST (turbocharger pressure gauge) to the boost compensator

SST 09992-00241



- (l) Apply about 6 volts of DC power to the fuel cut solenoid.

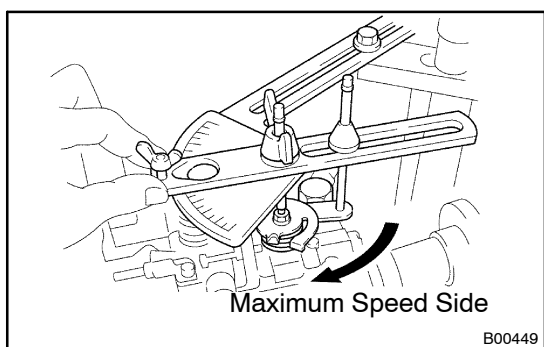
NOTICE:

- When applying voltage to the solenoid, position the battery as far away from the solenoid as possible so that a spark does not occur.
- When connecting the battery cable, connect the solenoid side first.

HINT:

Connect the battery through a 10 W bulb.

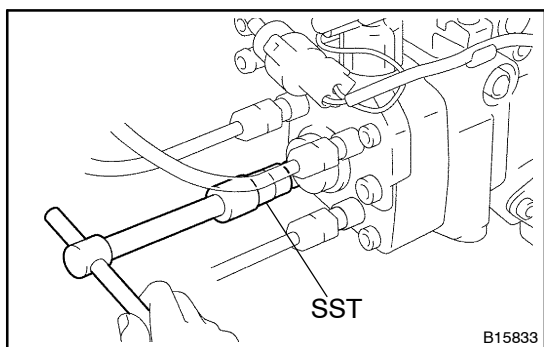
- (m) The pressure for feeding fuel to the injection pump should be 20 kPa (0.2 kgf/cm², 2.8 psi). The fuel temperature for pump testing should be 40 – 45°C (104 – 113°F).



- (n) Install an angle gauge to the stand, and set it to the adjusting lever.

Part No. 95095-10360 (Stand w/ angle gauge)

- (o) Secure the adjusting lever fully on the maximum speed side.

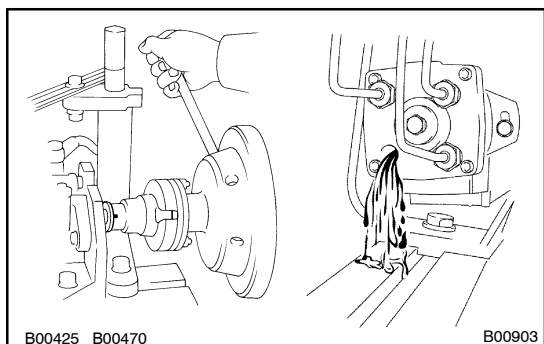


- (p) Check the installation direction of the camplate as follows:

- (1) Disconnect the injection pipe from the position marked "C" on the distributive head.

- (2) Using SST, remove the delivery valve holder.

SST 09260-54012 (09269-54020)



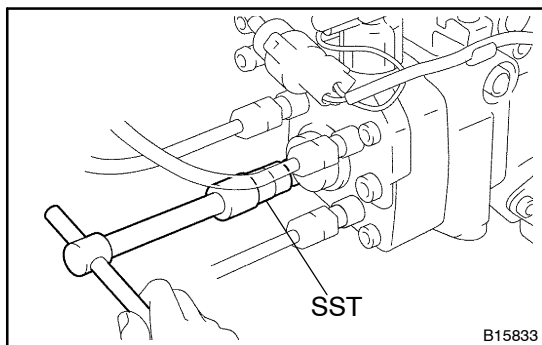
- (3) Check that fuel is flowing out when the mark is in the position shown in the illustration.

If not, it is improperly assembled.

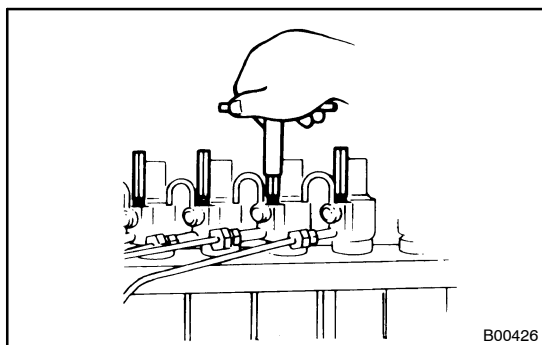
- (4) Disassemble and change the camplate position 180° in the opposite direction.

HINT:

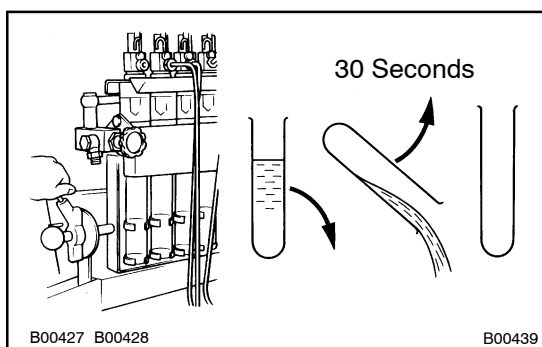
At this time, disconnect the fuel cut solenoid wire harness.



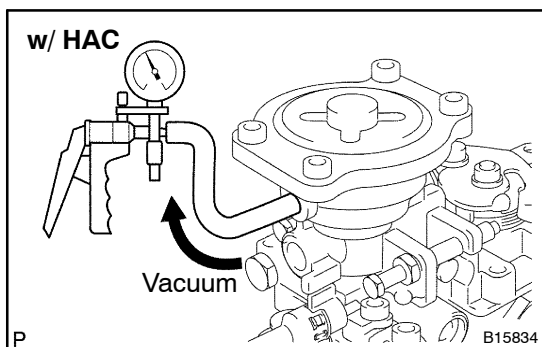
- (5) Using SST, install the delivery valve holder.
 SST 09260-54012 (09269-54020)
Torque: 58.85 N·m (600 kgf·cm, 43 ft·lbf)
 (6) Connect the injection pipe.



- (q) Bleed the air from the injection pipes.
 (r) Race the injection pump for 5 minutes at 1,200 rpm.
HINT:
 Do this operation by replacing the overflow screw to a hollow screw.
NOTICE:
Check that there is no fuel leakage or abnormal noise.



- HINT:**
- Measure the volume of each injection cylinder with a measuring cylinder.
 - Before measuring the injection volume, first hold the cylinder tilted for at least 30 seconds to discard all the fuel.



2. w/ HAC:
CHECK HIGH ALTITUDE COMPENSATOR FOR AIR TIGHTNESS

- (a) Apply 73 kPa (548 mmHg, 21.56 in.Hg) of vacuum to the high altitude compensator.
 (b) Measure the time it takes for vacuum to drop to 72 kPa (540 mmHg, 21.26 in.Hg).

Vacuum drop: 5 seconds or more

3. PRE-SET FULL LOAD INJECTION VOLUME

- (a) Set the adjusting lever to maximum position.
 (b) w/ HAC:
 Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.
 (c) Measure the injection volume.

Injection volume:

w/ ACSD (w/ HAC)

(Part No. 22100-5D121)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.42 - 12.54 (0.75 - 0.77)

w/ ACSD (w/o HAC)
(Part No. 22100-5D310)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	12.18 - 12.50 (0.74 - 0.76)

w/o ACSD

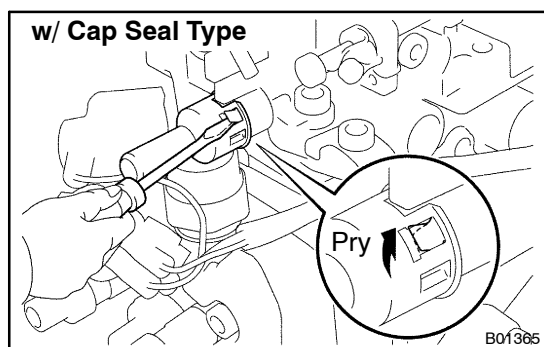
**(Part No. 22100-5D110, 22100-5D230, 22100-5D250,
 22100-5D260)**

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.42 - 12.74 (0.76 - 0.78)

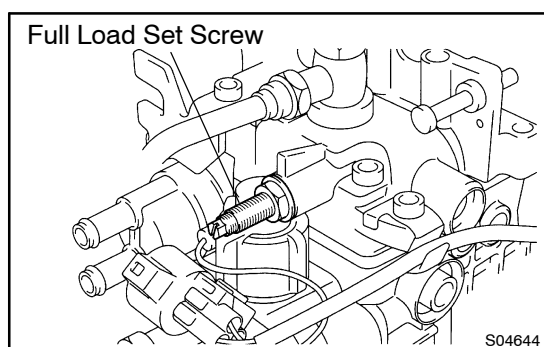
w/o ACSD

(Part No. 22100-5D240)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.12 - 12.44 (0.74 - 0.76)



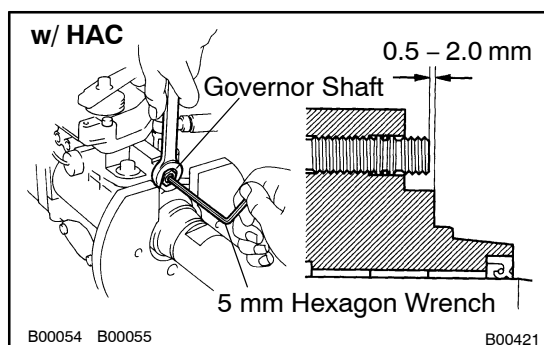
- (d) w/ Cap Seal Type:
- (1) Disconnect the dust cover from the fuel cut solenoid.
 - (2) Using a small screwdriver, pry the 4 claws.
 - (3) Remove the cap seal.
- (e) w/ Wire Seal Type:
 Cut off the wire seal.



- (f) Adjust by turning the full load set screw.

HINT:

The injection volume will increase about 3 cc (0.18 cu in.) with each 1/2 turn of the screw.



4. w/o HAC:

PRE-SET LOAD SENSING TIMER

Using a 5 mm hexagon wrench, adjust the protrusion of the governor shaft.

Protrusion:

**(Part No. 22100-5D121, 22100-5D230, 22100-5D240,
 22100-5D250, 22100-5D260, 22100-5D310)**
0.5 - 2.0 mm (0.020 - 0.079 in.)

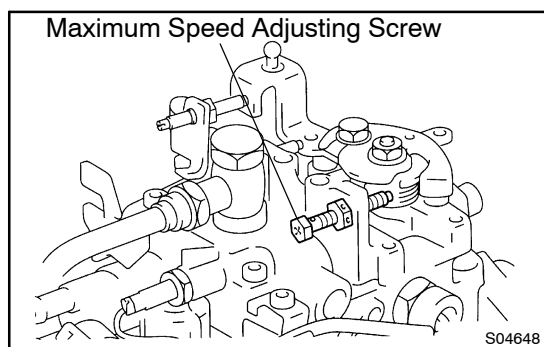
5. PRE-SET MAXIMUM SPEED

- (a) Set the adjusting lever to maximum position.
- (b) w/ HAC:
Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.
- (c) Measure the injection volume.

Injection volume:

(Part No. 22100-5D110, 22100-5D121, 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260, 22100-5D310)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
2,300	200	7.46 – 9.46 (0.46 – 0.58)



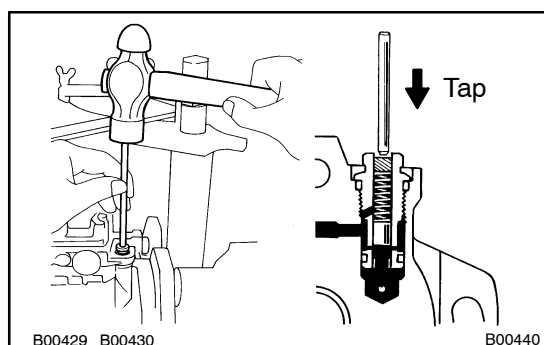
- (d) Cut off the seal wire.
- (e) Adjust the injection volume with the maximum speed adjusting screw.

6. ADJUST PUMP INNER PRESSURE

- (a) Set the adjusting lever to maximum position.
- (b) w/ HAC:
Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.
- (c) Measure the pump inner pressure at the below listed rpm.

Pump inner pressure:

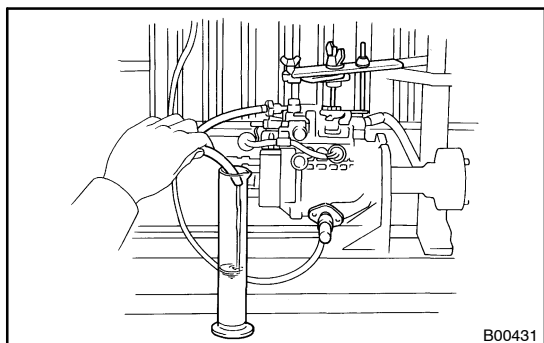
Pump rpm	Inner kPa (kgf/cm ² , psi)
500	314 – 372 (3.2 – 3.8, 46 – 54)
2,100	618 – 676 (6.3 – 6.9, 90 – 98)



If the pressure is low, adjust by lightly tapping the regulator valve piston while watching the pressure gauge.

HINT:

If the pressure is too high or if the regulator valve was tapped in too far, the regulator valve must be replaced.



7. CHECK OVERFLOW VOLUME

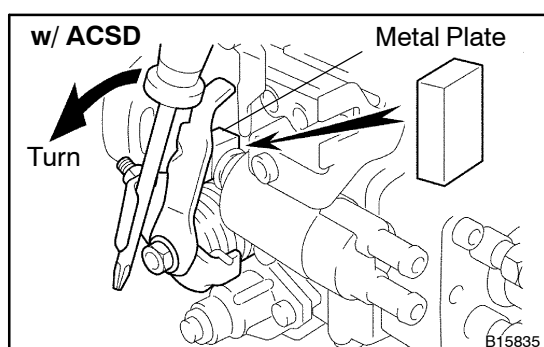
- Set adjusting lever to maximum position.
- w/ HAC:
Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.
- Measure the overflow volume at the below listed rpm.

Overflow volume:

Pump rpm	Overflow volume cc/min. (cu in./min.)
2,200	367 – 800 (22.4 – 48.8)

HINT:

Always use the overflow screw installed on the pump to the adjusted.



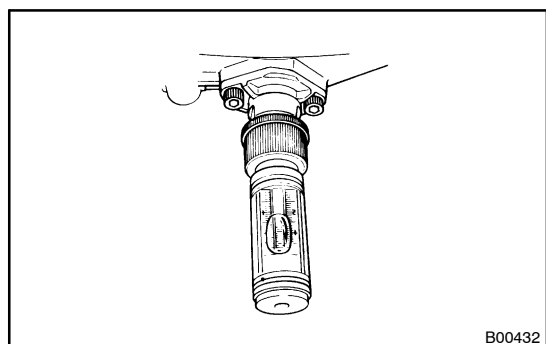
8. w/ ACSD:

RELEASE COLD STARTING SYSTEM

- Using a screwdriver, turn the cold starting lever counter-clockwise approx. 20°.
- Put a metal plate (thickness of 8.5 – 10.0 mm (0.335 – 0.394 in.)) between the cold starting lever and thermo wax plunger.

HINT:

Keep the cold starting system released until all measurements and adjustments are finished.



9. ADJUST TIMER

- Set the timer measuring device at zero.
- w/ HAC:
Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.
- Measure the timer piston stroke at the below listed rpm.

Timer piston stroke:

w/ TCV (w/ HAC)

(Part No. 22100-5D121)

Pump rpm		Piston stroke mm (in.)
800	Full TCV OFF	0 – 0.81 (0 – 0.0319)
1,200	Full TCV OFF	1.77 – 2.57 (0.0697 – 0.1012)
	Partial TCV ON	1.47 – 2.87 (0.0579 – 0.1130)
	Partial TCV OFF	0.03 – 1.03 (0.0012 – 0.0406)
1,900	Full TCV OFF	4.85 – 5.65 (0.1909 – 0.2224)
2,200	Full TCV OFF	5.85 – 6.34 (0.2303 – 0.2496)

w/ TCV (w/o HAC)
(Part No. 22100-5D310)

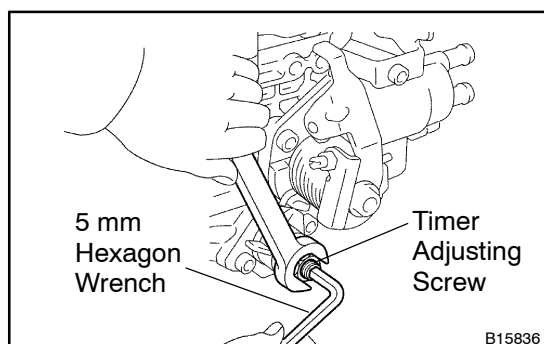
Pump rpm	Piston stroke mm (in.)	
800	Full TCV OFF	1.65 – 2.45 (0.0650 – 0.0965)
1,200	Full TCV OFF	3.41 – 4.21 (0.1343 – 0.1657)
	Partial TCV ON	3.11 – 4.51 (0.1224 – 0.1776)
	Partial TCV OFF	1.67 – 2.67 (0.0657 – 0.1051)
1,900	Full TCV OFF	6.49 – 7.29 (0.2555 – 0.2870)
2,200	Full TCV OFF	7.06 – 7.54 (0.2780 – 0.2968)

w/o TCV
(Part No. 22100-5D110, 22100-5D230, 22100-5D240,
22100-5D250, 22100-5D260)

Pump rpm	Piston stroke mm (in.)	
850	0.23 – 1.03 (0.0091 – 0.0406)	
1,200	1.77 – 2.57 (0.0697 – 0.1012)	
2,000	5.30 – 6.10 (0.2087 – 0.2402)	
2,300	6.36 – 6.84 (0.2504 – 0.2693)	

HINT:

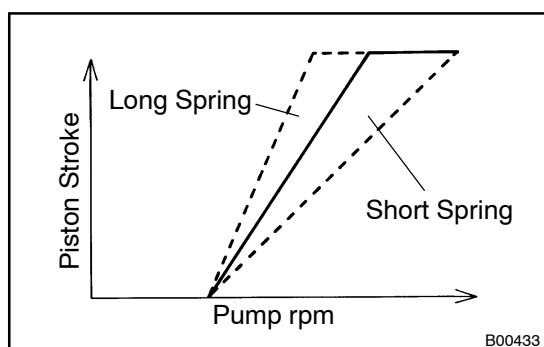
Check that the hysteresis is within 0.3 mm (0.012 in.).



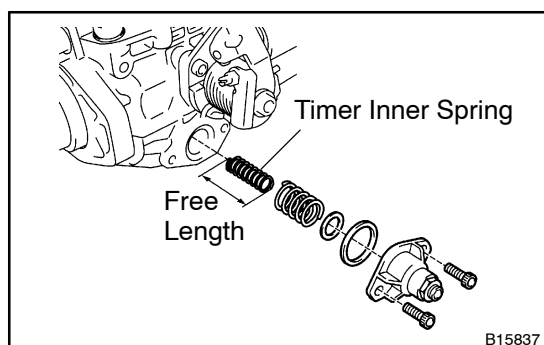
- (d) Using a 5 mm hexagon wrench, adjust by turning the timer adjusting screw.

HINT:

Turn clockwise to reduce the stroke, turn counterclockwise to increase the stroke.



- (e) Check the timer stroke for characteristic tendency.



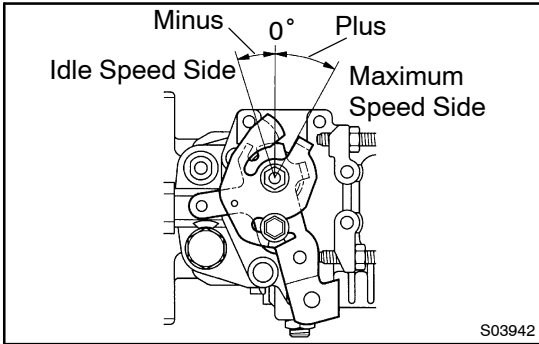
If tendency is not as specified, select and replace the timer (inner) spring.

Timer inner spring free length:

27.9 mm (1.098 in.)	33.5 mm (1.319 in.)	34.2 mm (1.346 in.)
32.5 mm (1.280 in.)	33.8 mm (1.331 in.)	34.7 mm (1.366 in.)

HINT:

The timer stroke will increase with a long spring and decrease with a short spring.



10. ADJUST FULL LOAD INJECTION VOLUME

- (a) The adjusting lever angle for the adjustment below should be as shown in the illustration.

Adjusting lever angle:

A (Maximum speed side)		
Plus 23.5 – 33.5°	w/ ACSD w/o ACSD (A/T)	Minus 12.5 – 22.5°
	w/o ACSD (M/T)	Minus 11.5 – 21.5°

- (b) w/ HAC:

Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.

- (c) Measure the full load injection volume.

Injection volume:

w/ ACSD (w/ HAC)

(Part No. 22100-5D121)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.42 – 12.54 (0.75 – 0.77)

w/ ACSD (w/o HAC)

(Part No. 22100-5D310)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	12.18 – 12.50 (0.74 – 0.76)

w/o ACSD

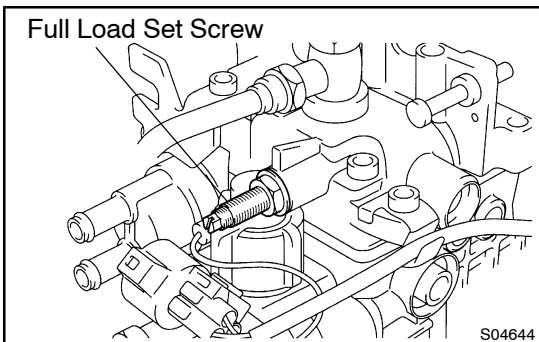
(Part No. 22100-5D110, 22100-5D230, 22100-5D250, 22100-5D260)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.42 – 12.74 (0.76 – 0.78)

w/o ACSD

(Part No. 22100-5D240)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,600	200	12.12 – 12.44 (0.74 – 0.76)



- (d) Adjust by turning the full load set screw.

HINT:

The injection volume will increase about 3 cc (0.18 cu in.) with each 1/2 turn of the screw.

11. ADJUST MAXIMUM SPEED

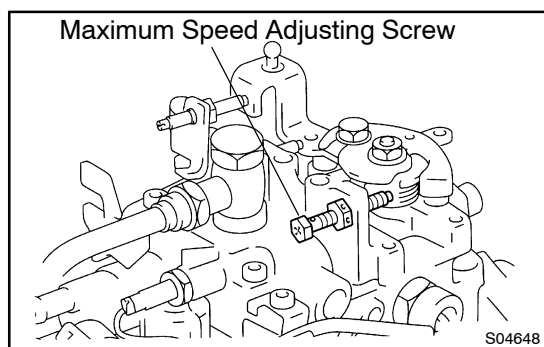
(a) w/ HAC:

Apply 101 kPa (760 mmHg, 29.83 in.Hg) of vacuum to the high altitude compensator.

(b) Measure the injection volume at each pump rpm.

Injection volume:**(Part No. 22100-5D110, 22100-5D121, 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260, 22100-5D310)**

Adusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Remark
23.5 – 33.5°	2,300	200	7.46 – 9.46 (0.46 – 0.58)	–
	2,450	200	4.6 – 6.2 (0.28 – 0.38)	Adjust
	2,700	200	1.3 (0.08) or less	–



(c) Adjust by turning the maximum speed adjusting screw.

12. CHECK INJECTION VOLUME

Measure the injection volume at each pump rpm and HAC vacuum (w/ HAC).

Injection volume:**w/ HAC (w/ ACSD)****(Part No. 22100-5D121)**

Adjusting lever angle	Pump rpm	HAC vacuum kPa (mmHg, in.Hg)	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Plus 23.5 – 33.5°	100	101 (760, 29.83)	200	13.6 – 18.4 (0.83 – 1.12)	1.4 (0.09)	Volume during starting
	500	101 (760, 29.83)	200	10.14 – 11.54 (0.62 – 0.70)	0.5 (0.03)	–
	1,600	101 (760, 29.83)	200	12.22 – 12.54 (0.75 – 0.77)	0.4 (0.02)	Basic full load injection volume
		85.3 (640, 25.19)	200	10.4 – 11.0 (0.63 – 0.67)	–	–
		70.7 (530, 20.88)	200	8.58 – 9.34 (0.52 – 0.57)	–	–
	1,900	101 (760, 29.83)	200	11.72 – 12.40 (0.72 – 0.76)	0.5 (0.03)	–

ENGINE FUEL – INJECTION PUMP (5L)

w/ HAC (w/o ACSD)**(Part No. 22100-5D110, 22100-5D250, 22100-5D260)**

Adjusting lever angle	Pump rpm	HAC vacuum kPa (mmHg, in.Hg)	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Plus 23.5 – 33.5°	100	101 (760, 29.83)	200	13.6 – 18.4 (0.83 – 1.12)	1.4 (0.09)	Volume during starting
	500	101 (760, 29.83)	200	10.14 – 11.54 (0.62 – 0.70)	0.5 (0.03)	–
	1,600	101 (760, 29.83)	200	12.42 – 12.74 (0.76 – 0.78)	0.4 (0.02)	Basic full load injection volume
		85.3 (640, 25.19)	200	10.6 – 11.2 (0.65 – 0.68)	–	–
		70.7 (530, 20.88)	200	8.78 – 9.54 (0.54 – 0.58)	–	–
	1,900	101 (760, 29.83)	200	11.92 – 12.60 (0.73 – 0.77)	0.5 (0.03)	–

w/o HAC (w/ ACSD)**(Part No. 22100-5D310)**

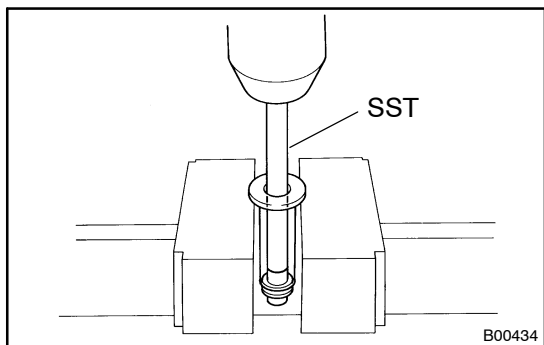
Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Plus 23.5 – 33.5°	100	200	13.6 – 18.4 (0.83 – 1.12)	1.4 (0.09)	Volume during starting
	500	200	10.3 – 11.3 (0.63 – 0.69)	0.5 (0.03)	–
	1,200	200	12.18 – 12.50 (0.74 – 0.76)	0.4 (0.02)	Basic full load injection volume
	2,000	200	11.17 – 12.07 (0.68 – 0.74)	0.5 (0.03)	–

w/o HAC (w/o ACSD)**(Part No. 22100-5D230)**

Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Plus 23.5 – 33.5°	100	200	13.6 – 18.4 (0.83 – 1.12)	1.4 (0.09)	Volume during starting
	500	200	10.14 – 11.54 (0.62 – 0.70)	0.5 (0.03)	–
	1,600	200	12.42 – 12.74 (0.76 – 0.78)	0.4 (0.02)	Basic full load injection volume
	1,900	200	11.92 – 12.60 (0.73 – 0.77)	0.5 (0.03)	–

w/o HAC (w/o ACSD)**(Part No. 22100-5D240)**

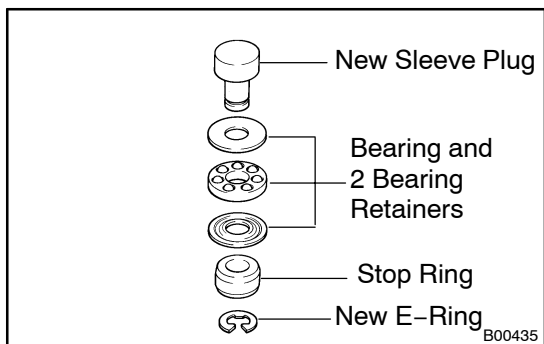
Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Plus 23.5 – 33.5°	100	200	13.6 – 18.4 (0.83 – 1.12)	1.4 (0.09)	Volume during starting
	500	200	9.84 – 11.24 (0.60 – 0.69)	0.5 (0.03)	–
	1,600	200	12.12 – 12.44 (0.74 – 0.76)	0.4 (0.02)	Basic full load injection volume
	1,900	200	11.62 – 12.30 (0.71 – 0.75)	0.5 (0.03)	–



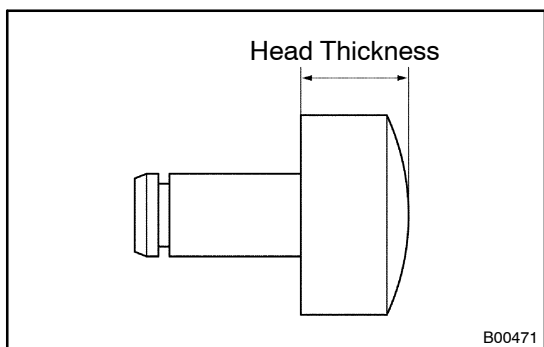
If the injection volume at 100 rpm is not as specified, replace the governor sleeve plus as follows:

- (1) Using SST and a press, press out the sleeve plug assembly from the governor sleeve.

SST 09236-00101 (09237-00070)



- (2) Remove the E-ring, stop ring, bearing and 2 bearing retainers from the sleeve plug.



- (3) Measure the head thickness of the sleeve plug, and select a new sleeve plug.

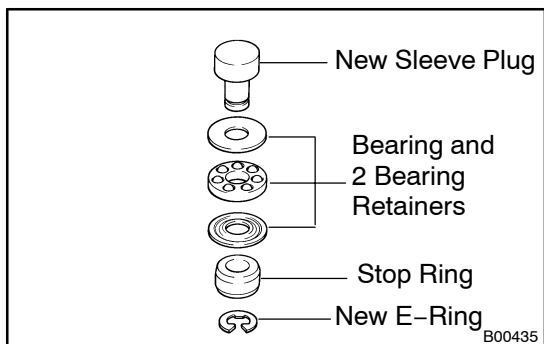
Governor sleeve plug head thickness:

3.0 mm (0.118 in.)	3.5 mm (0.138 in.)	4.0 mm (0.157 in.)
3.1 mm (0.122 in.)	3.6 mm (0.142 in.)	4.1 mm (0.161 in.)
3.2 mm (0.126 in.)	3.7 mm (0.146 in.)	4.2 mm (0.165 in.)
3.3 mm (0.130 in.)	3.8 mm (0.150 in.)	—
3.4 mm (0.134 in.)	3.9 mm (0.154 in.)	—

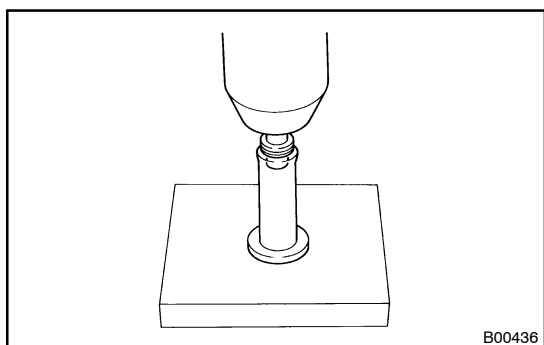
HINT:

Lengthening the plug by 0.1 mm (0.004 in.) will decrease injection volume by 0.6 cc (0.04 cu in.).

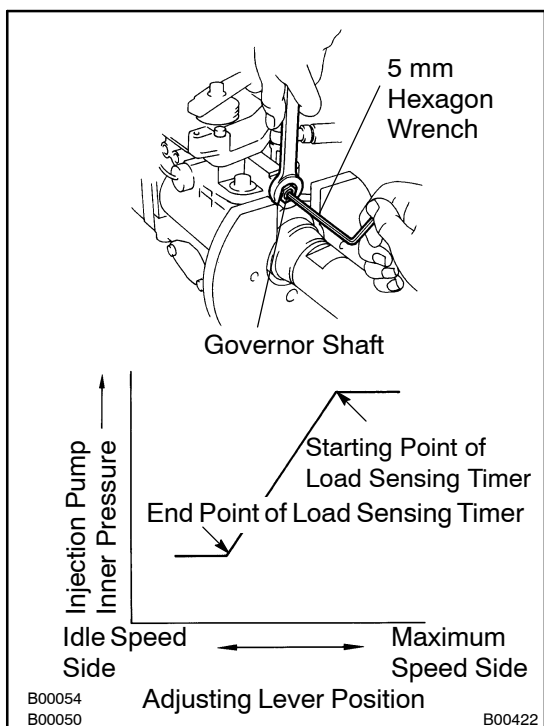
If the variation limit is greater than specified, replace the delivery valve.



- (1) Install the bearing, 2 retainers and stop ring to the new sleeve plug with a new E-ring.



- (2) Using a press, press in the sleeve plug assembly to the governor sleeve.



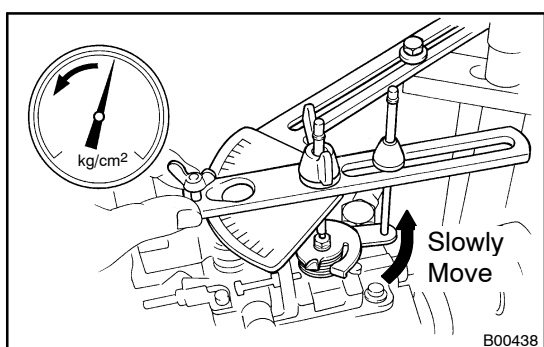
13. ADJUST LOAD SENSING TIMER

- (a) Using a 5 mm hexagon wrench, adjust the starting and end points of the load sensing timer by turning the governor shaft.
- (b) Set the adjusting lever to maximum position.
- (c) Measure the injection volume.

Injection volume:

(Part No. 22100-5D121, 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260, 22100-5D310)

Adjusting lever position	Pump rpm	No. of measuring strokes
Maximum speed side	1,200	200



- (d) Slowly move the adjusting lever from the maximum speed side to the idle speed side, and secure it at the point where the pump inner pressure begins to drop.
- (e) Measure the injection volume at the drop point (starting point).

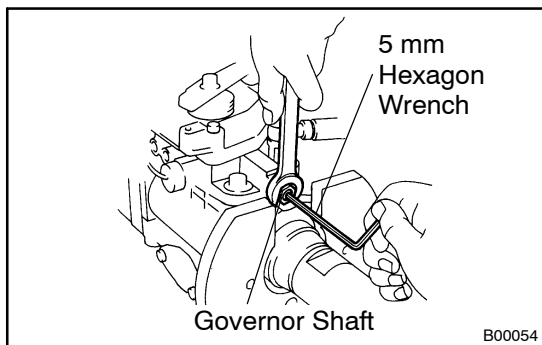
Injection volume:

(Part No. 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	Measured value at step (d) minus 1.6 (0.10) ± 0.4 (0.02)

(Part No. 22100-5D121, 22100-5D310)

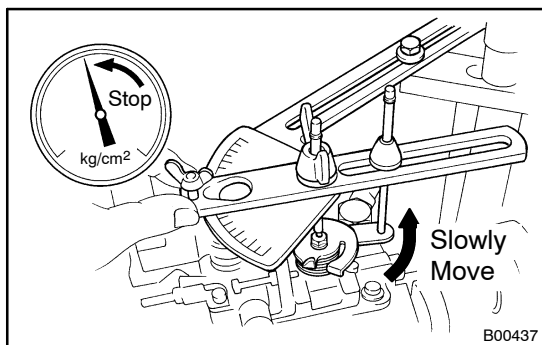
Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	Measured value at step (d) minus 1.0 (0.06) ± 0.4 (0.02)



- (f) Using a 5 mm hexagon wrench, adjust the load sensing timer by turning the governor shaft, and perform the measurement again as specified.

HINT:

The injection volume will increase approx. 3 cc (0.2 cu in.) with each 1/2 turn of the governor shaft.



- (g) Check the end point injection volume by slowly moving the adjusting lever from the maximum speed side to the idle speed side, and secure it at the point where the pump inner pressure stops dropping.

Injection volume:

w/ ACSD

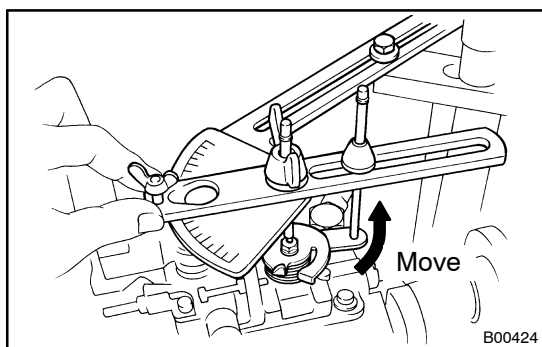
(Part No. 22100-5D121, 22100-5D310)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	8.34 – 8.74 (0.51 – 0.53)

w/o ACSD

(Part No. 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260)

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
1,200	200	9.58 – 9.98 (0.59 – 0.61)



- (h) Check the timer piston fluctuation when the adjusting lever is moved from the maximum speed side to the idle speed side.

Timer piston fluctuation:

w/ ACSD (w/ HAC)

(Part No. 22100-5D121)

Pump rpm	Timer piston fluctuation	mm (in.)
1,200	0.03 – 1.03 (0.0012 – 0.0406)	

w/ ACSD (w/o HAC)

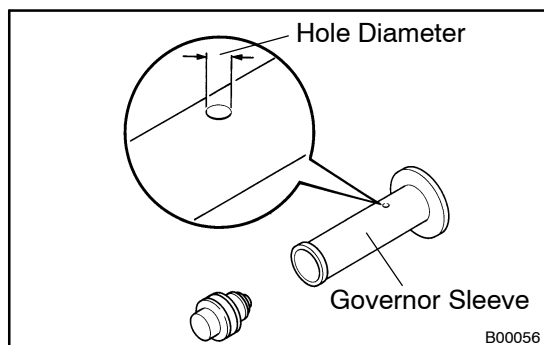
(Part No. 22100-5D310)

Pump rpm	Timer piston fluctuation	mm (in.)
1,200	1.67 – 2.67 (0.0657 – 0.1051)	

w/o ACSD

(Part No. 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260)

Pump rpm	Timer piston fluctuation	mm (in.)
1,200	0.82 – 1.22 (0.0323 – 0.0480)	



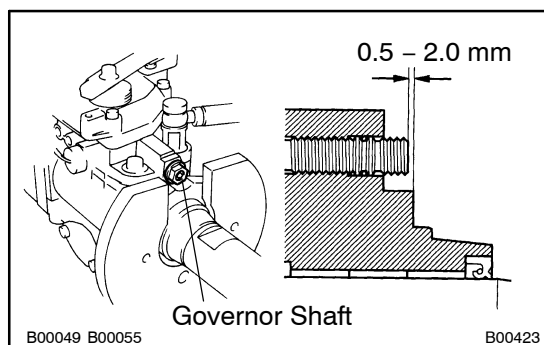
If the timer stroke is not as specified when the load sensing is at maximum retard angle, select a new governor sleeve.

Governor sleeve hole diameter:

0.90 mm (0.0354 in.)	0.95 mm (0.0374 in.)	1.00 mm (0.0394 in.)
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HINT:

A large hole diameter decreases the timer stroke and a smaller hole diameter increases the timer stroke.



- (i) Check the protrusion of the governor shaft.

Protrusion:

(Part No. 22100-5D121, 22100-5D230, 22100-5D240, 22100-5D250, 22100-5D260, 22100-5D310)

0.5 – 2.0 mm (0.020 – 0.079 in.)

14. ADJUST IDLE SPEED

- (a) Measure the injection volume for each pump rpm.

Injection volume:

w/ ACSD (w/ HAC)

(Part No. 22100-5D121)

Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Minus 12.5 – 22.5°	350	200	2.86 – 3.86 (0.17 – 0.24)	0.34 (0.02)	Adjust
	575	200	2.4 (0.15) or less	–	–

w/ ACSD (w/o HAC)

(Part No. 22100-5D310)

Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Minus 12.5 – 22.5°	350	200	2.86 – 3.86 (0.17 – 0.24)	0.34 (0.02)	Adjust
	575	200	2.0 (0.12) or less	–	–

w/o ACSD (M/T)

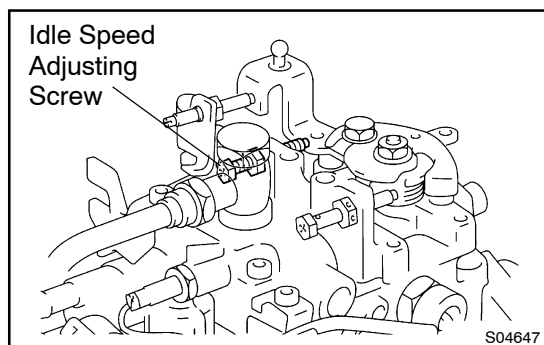
(Part No. 22100-5D110, 22100-5D230, 22100-5D240, 22100-5D250)

Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Minus 11.5 – 21.5°	350	200	3.7 – 4.7 (0.23 – 0.29)	0.34 (0.02)	Adjust
	575	200	2.4 (0.15) or less	–	–

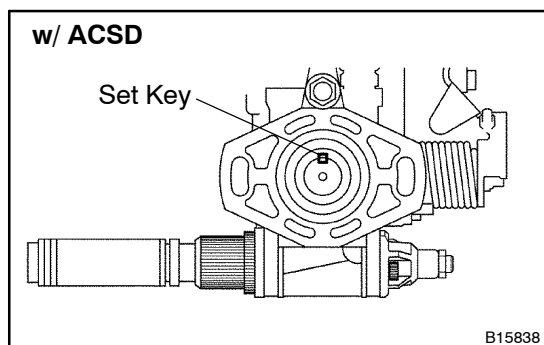
w/o ACSD (A/T)

(Part No. 22100-5D260)

Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)	Variation limit cc (cu in.)	Remark
Minus 12.5 – 22.5°	400	200	2.86 – 3.86 (0.17 – 0.24)	0.34 (0.02)	Adjust
	625	200	2.6 (0.16) or less	–	–

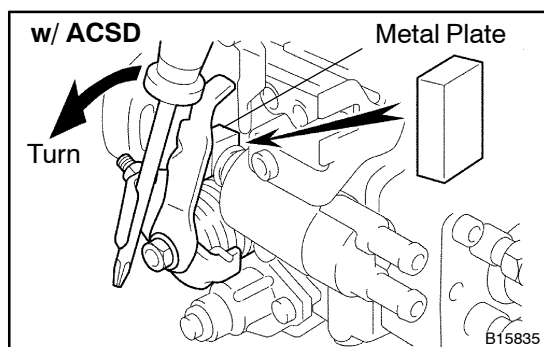


- (b) Adjust injection volume by turning the idle speed adjusting screw.

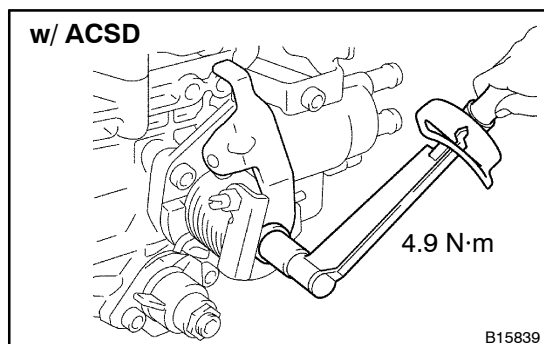


**15. w/ ACSD:
ADJUST COLD STARTING SYSTEM**

- (a) Remove the overflow screw and check the fuel temperature in the fuel pump.
Fuel temperature: 15 – 35°C (59 – 95°F)
- (b) Set the set key of the pump drive shaft in a vertical or horizontal position.
- (c) Set the scale of the timer measuring device to zero.



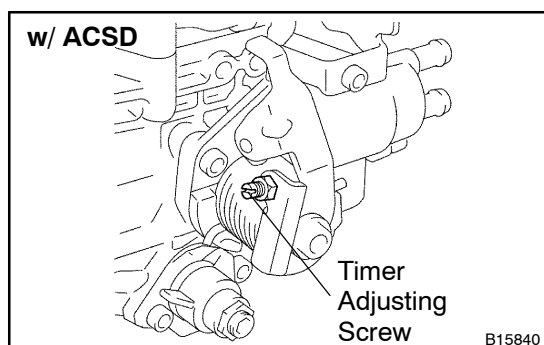
- (d) Check the adjusting lever opening angle and consider this angle as zero.
- (e) Remove the metal plate between the cold starting lever and thermo wax plunger.



- (f) Torque the cold starting lever clockwise to approx. 4.9 N·m (50 kgf·cm, 43 in·lbf) and keep the lever tightened for about 10 seconds. Then release the torque.
- (g) Measure the timer piston stroke.

Timer piston stroke: (Part No. 22100-5B880)

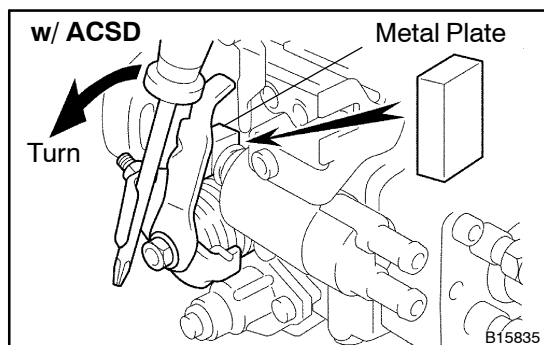
Fuel temperature C (°F)	Pump rpm	Piston stroke mm (in.)
25 (77)	350	1.80 – 2.00 (0.0709 – 0.0787)



- (h) Adjust by turning the timer adjusting screw.

HINT:

Screw in for stroke decrease.

**16. w/ ACSD:****ADJUST FAST IDLE SPEED**

- (a) Release the cold starting system.
 - (1) Using a screwdriver, turn the cold starting lever counterclockwise approx. 20°.
 - (2) Put a metal plate (thickness of 8.5 – 10.0 mm (0.335 – 0.394 in.)) between the cold starting lever and thermo wax plunger.

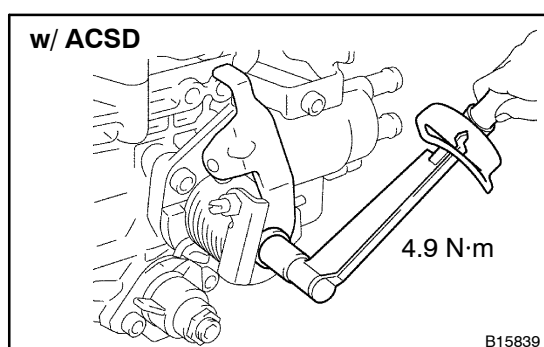
- (b) Set the adjusting lever to idle position.

- (c) Measure the injection volume.

Injection volume:**(Part No. 22100-5D121, 22100-5D310)**

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
350	200	q = 2.86 – 3.86 (0.17 – 0.24)

- (d) Remove the metal plate between the cold starting lever and thermo wax plunger.



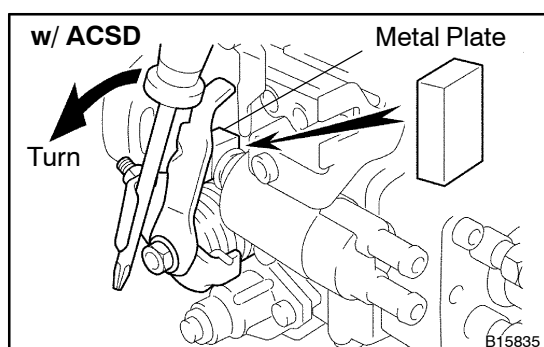
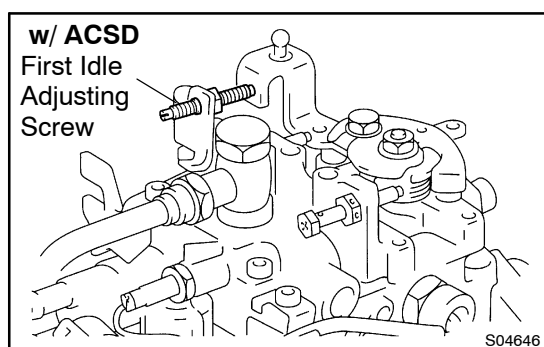
- (e) Torque the cold starting lever clockwise to approx. 4.9 N·m (50 kgf·cm, 43 in.·lbf) and keep the lever tightened for about 10 seconds. Then release the torque.

- (f) Measure the injection volume.

Injection volume:**(Part No. 22100-5D121, 22100-5D310)**

Pump rpm	No. of measuring strokes	Injection volume of each cylinder cc (cu in.)
350	200	q plus 0.52 – 0.72 (0.03 – 0.04)

- (g) Adjust the injection volume by turning the fast idle adjusting screw.

**17. POST ADJUSTMENT CHECK**

- (a) Check the injection stops when the fuel cut solenoid harness is removed.

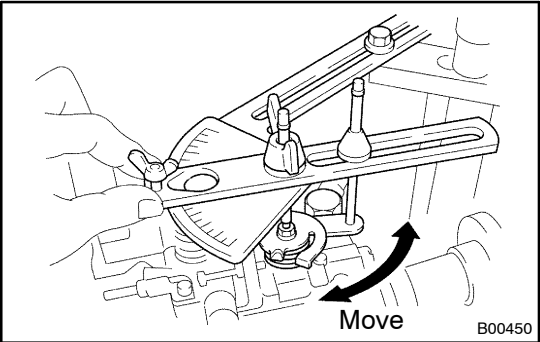
Pump revolution: 100 rpm

- (b) w/ ACSD:

Release the cold starting system.

- (1) Using a screwdriver, turn the cold starting lever counterclockwise approx. 20°.

- (2) Put a metal plate (thickness of 8.5 – 10.0 mm (0.335 – 0.394 in.)) between the cold starting lever and thermo wax plunger.

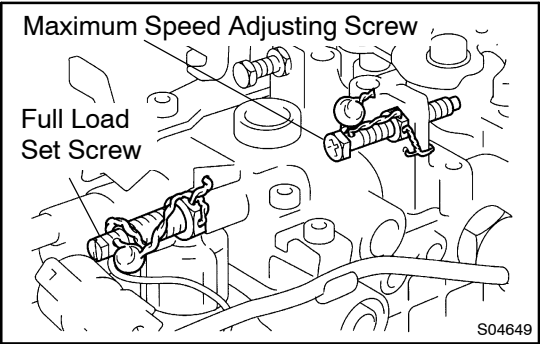


- (c) Check the adjusting lever movement.

Adjusting lever angle:

w/ ACSD, w/o ACSD (A/T)	41 – 51°
w/o ACSD (M/T)	42 – 48°

- (d) w/ ACSD:
Remove the metal plate between the cold starting lever and thermo wax plunger.



18. SEAL PARTS

Seal the full load set screw and maximum speed adjusting screw with new lead seals.