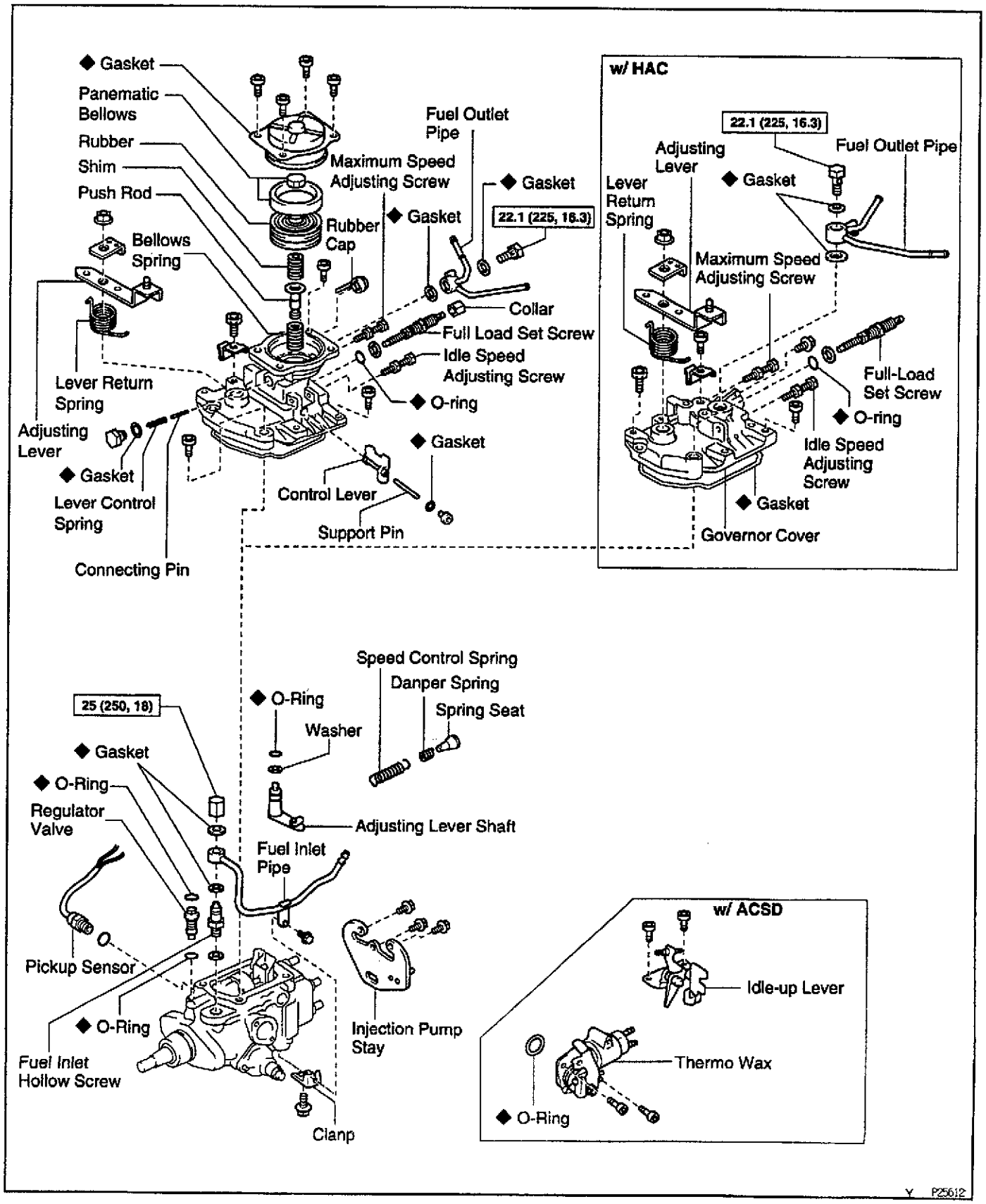
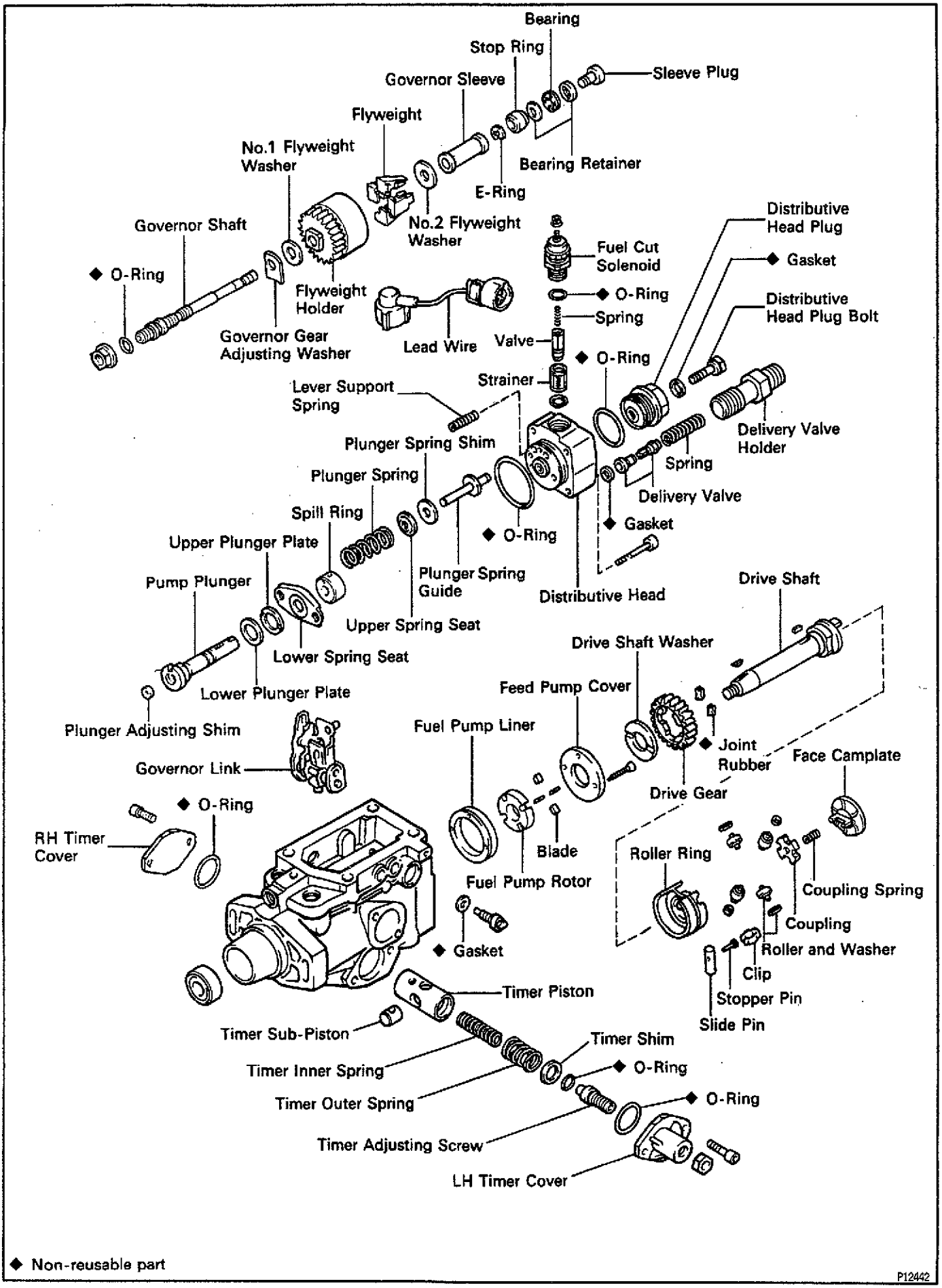
INJECTION PUMP

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

E0558A-02

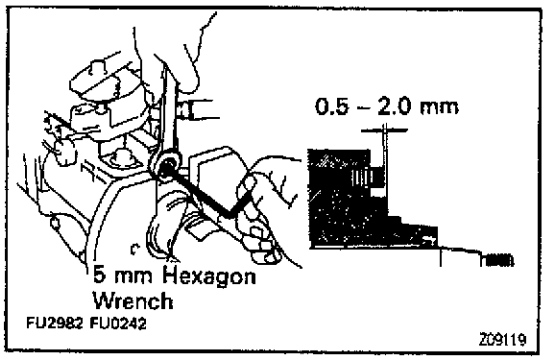
EG





◆ Non-reusable part

P12442



EG

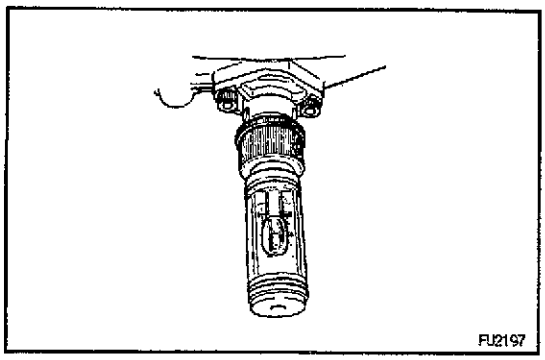
INJECTION PUMP ADJUSTMENT

1. PRE–SETTING OF LOAD SENSING TIMER

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

Protrusion:

0.5 – 2.0 mm (0.020 – 0.079 in.)



2. ADJUST TIMER

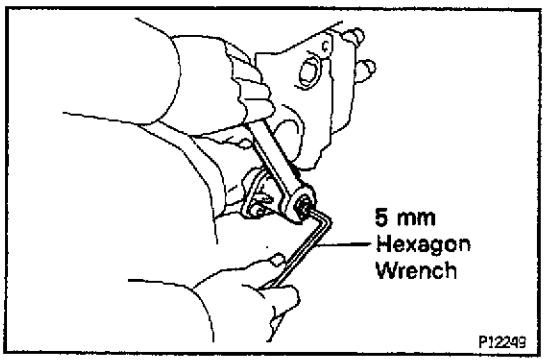
(a) Set the timer measuring device at 0.

(b) Apply 101 ± 0.2 kPa (760 ± 1.5 mm, 29.92 ± 0.06 in.Hg) absolute pressure.

(c) Measure the timer piston stroke at the below listed rpm.

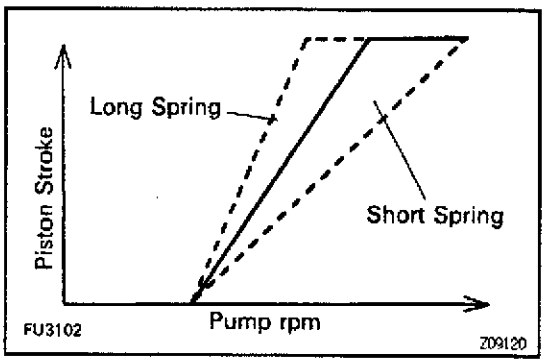
Pump rpm	Timer piston stroke mm (in.)
600	0.43 – 1.43 (0.0169 – 0.0563)
1,200	3.23 – 4.23 (1.1272 – 0.1665)
1,600	5.09 – 6.09 (0.2004 – 0.2398)
2,000	6.88 – 7.88 (0.2709 – 0.3102)
2,500	6.88 – 7.88 (0.2709 – 0.3102) (LST non–operation)

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

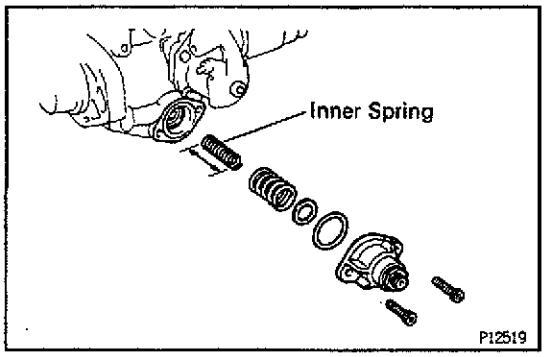


(d) Using a 5 mm hexagon wrench, adjust by turning the timer adjusting screw.

HINT: Turn colckwise 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 inner spring.

Timer spring free length:

32.0 mm (1.260 in.)

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

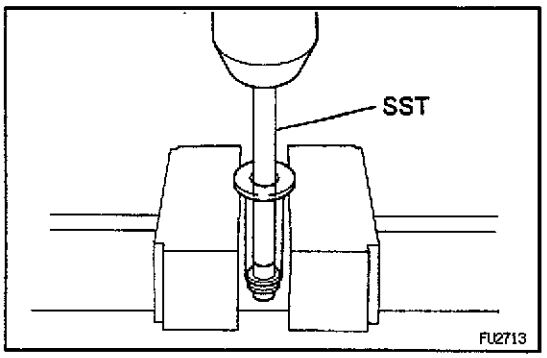
3. CHECK INJECTION VOLUME

(a) Apply 101 ± 0.2 kPa (760 ± 1.5 mm, 29.92 ± 0.06 in.Hg) absolute pressure.

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

Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume cc (cu in.)
1HZ	Plus 21 - 31°	1,200	200	11.80 - 12.20 (0.72 - 0.74)

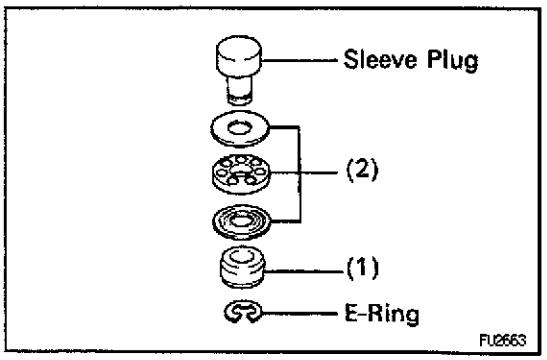
V07063



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

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

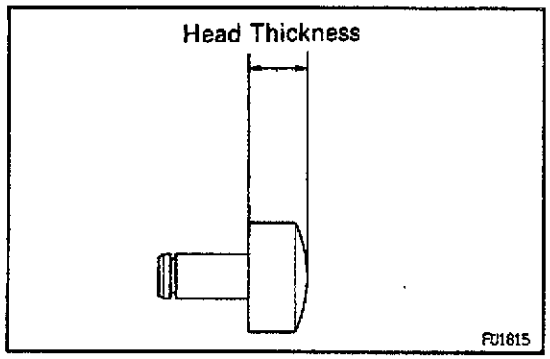
SST 09236–00101 (09237–00070)



- Remove the E–ring and following parts from the sleeve plug:

(1) Stop ring

(2) Bearing and 2 bearing retainers



EG

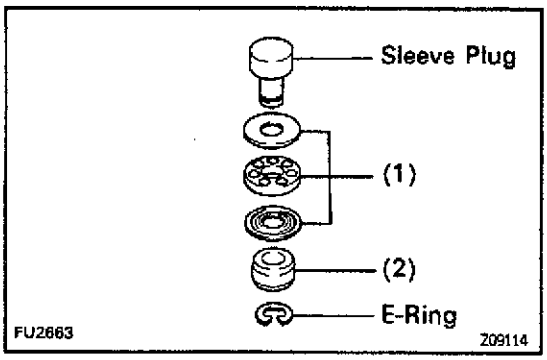
- Measure the head thickness of the sleeve plug, and select a new sleeve plug.

Governor sleeve plug head thickness:

mm (in.)

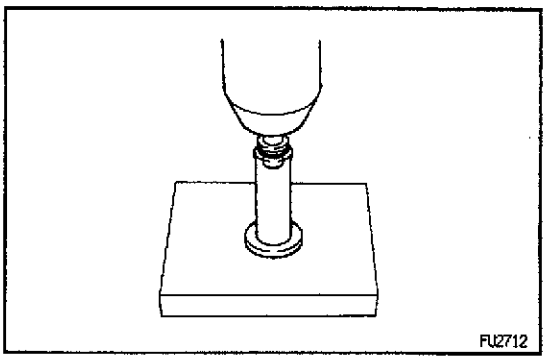
3.0 (0.118)	3.5 (0.138)	4.0 (0.158)
3.1 (0.122)	3.6 (0.142)	4.1 (0.161)
3.2 (0.126)	3.7 (0.146)	4.2 (0.165)
3.3 (0.130)	3.8 (0.150)	–
3.4 (0.134)	3.9 (0.154)	–

HINT: Lengthening the plug by 0.1 mm (0.004 in.) will decrease injection volume by 0.8 cc (0.05 cu in.).
If the variation limit is greater than specified, replace the delivery valve.

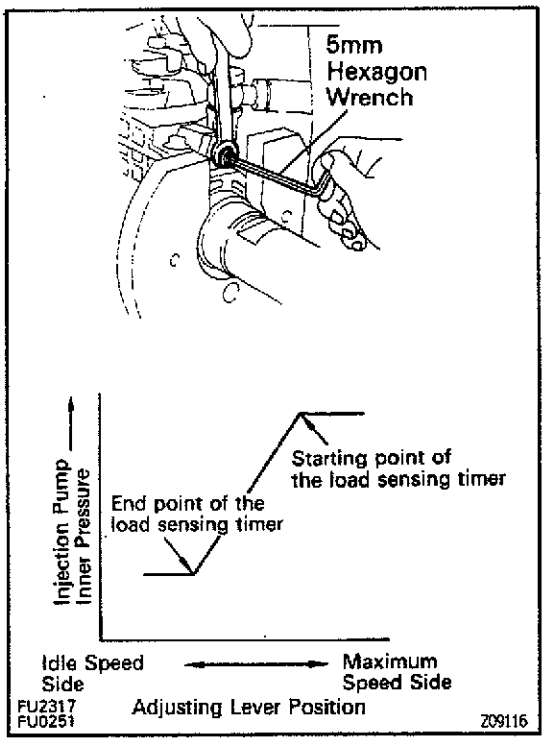


- Install these parts to the new sleeve plug with a new E–ring:

(1) Bearing and 2 retainers
(2) Stop ring



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



4. ADJUST LOAD SENSING TIMER

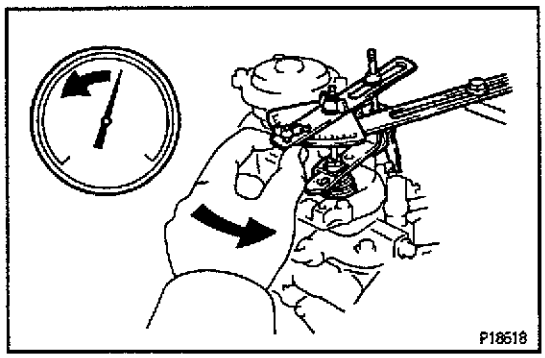
(a) Using a 5 mm hexagon wrench, adjust the starting and end points of the load sensing timer by turning the governor shaft.

(b) Set the adjusting lever to maximum position.

(c) Apply 101 ± 0.2 kPa (760 ± 1.5 mm, 29.92 ± 0.06 in.Hg) absolute pressure.

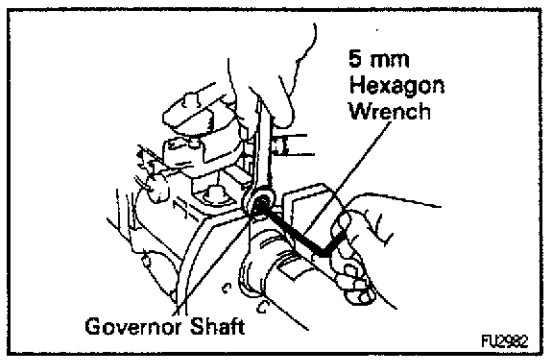
(d) Measure the injection volume.

Adjusting lever position	Pump rpm	No. of measuring strokes
Maximum speed side	1,600	200

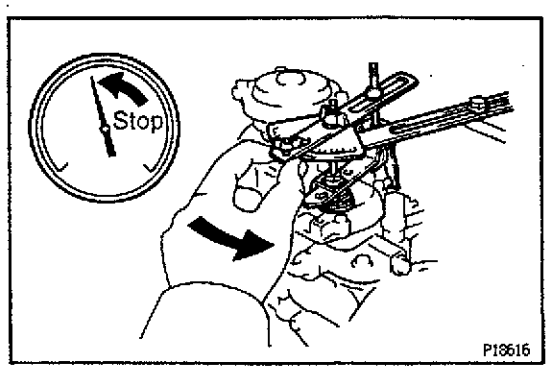


(e) Slowly move the adjusting lever from the maximum speed side to the idle speed side, and secure it at the point where the pump inner pressure begins to drop.

(f) Measure the injection volume at the drop point (starting point).



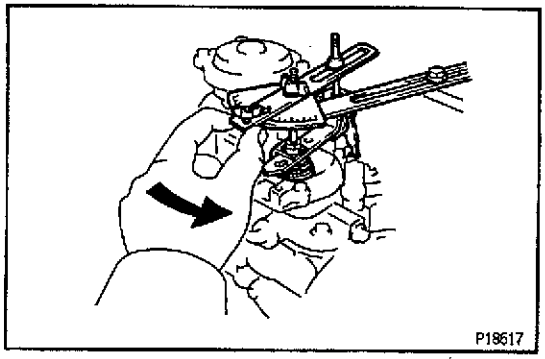
(g) Using a 5 mm hexagon wrench, adjust the load sensing timer by turning the governor shaft, and perform the measurement again as specified.
HINT: The injection volume will increase approx. 3 cc (0.2 cu in.) with each 1/2 turn of the governor shaft.



(h) 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.

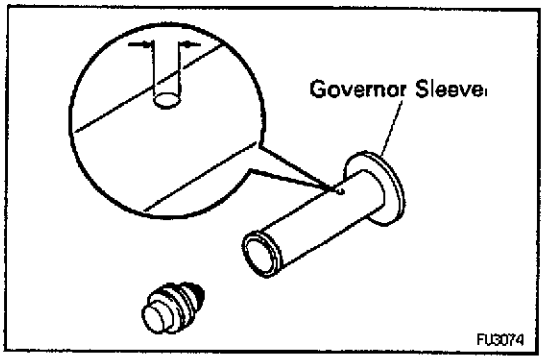
Pump rpm	No. of measuring strokes	Injection volume of each clinder cc (cu in.)
1,600	200	8.2 (0.50) or more

EG



(i) When the adjusting lever is moved slowly from the maximum speed side to the idle speed side, the timer stroke at the maximum retard angle (minimum timer piston stroke) should be as shown in the table below. (end point)

Pump rpm	Timer piston stoke mm (in.)
1,600	2.73 – 3.73 (0.1075 – 0.1469)

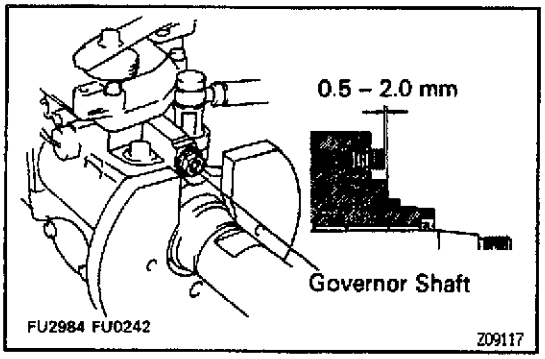


If the timer stroke is not as specified when the load sensing is at maximum retard angle, select a new governor sleeve.

Governor sleeve hole diameter:

0.85 mm (0.0335 in.) x 2 holes

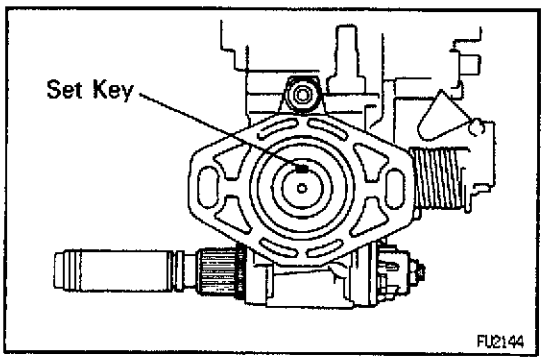
HINT: A large hole diameter decreases the timer stroke and a smaller hole diameter increases the timer stroke.



(j) Check the protrusion of the governor shaft.

Protrusion:

0.5 – 2.0 mm (0.020 – 0.079 in.)



5. ADJUST COLD STARTING SYSTEM

(a) Remove the overflow screw and check the fuel temperature in the fuel pump.

Fuel temperature:

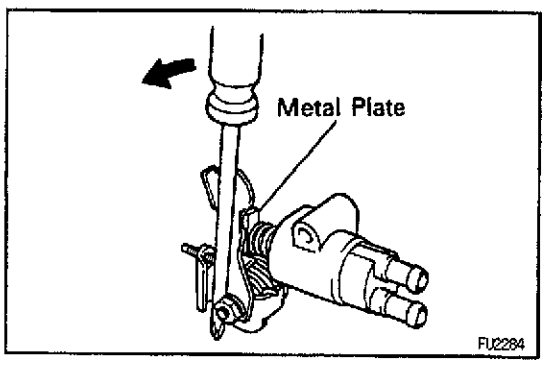
15 – 35°C (59 – 95°F)

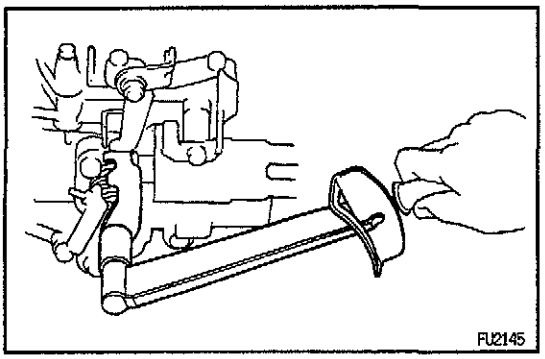
(b) Set the set key of the pump drive shaft in a vertical or horizontal position.

(c) Set the scale of the timer measuring device to 0.

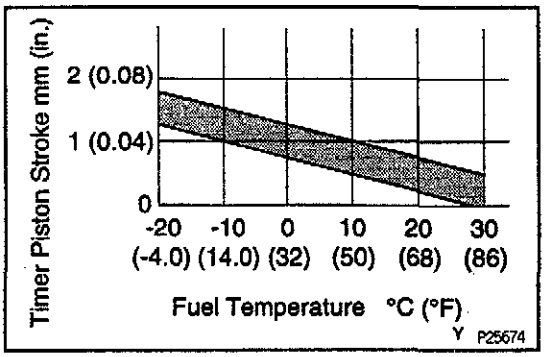
(d) Check the adjusting lever opening angle and consider this angle as 0.

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

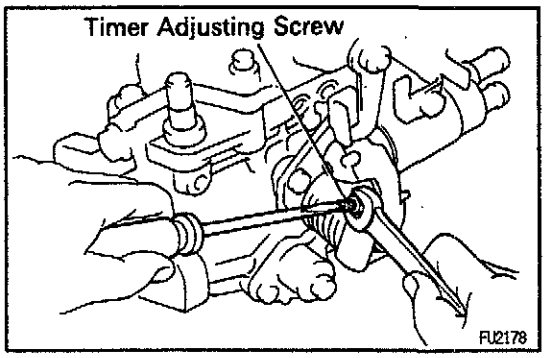




(f) Torque the cold starting lever clockwise to approx. 4.9 N·m (50 kgf·cm, 43 in.·lbf) and keep the lever tightened for about 10 seconds. Then release the torque.



(g) Measure the timer piston stroke.



(h) Adjust by turning the timer adjusting screw.
HINT: Screw in for stroke decrease.