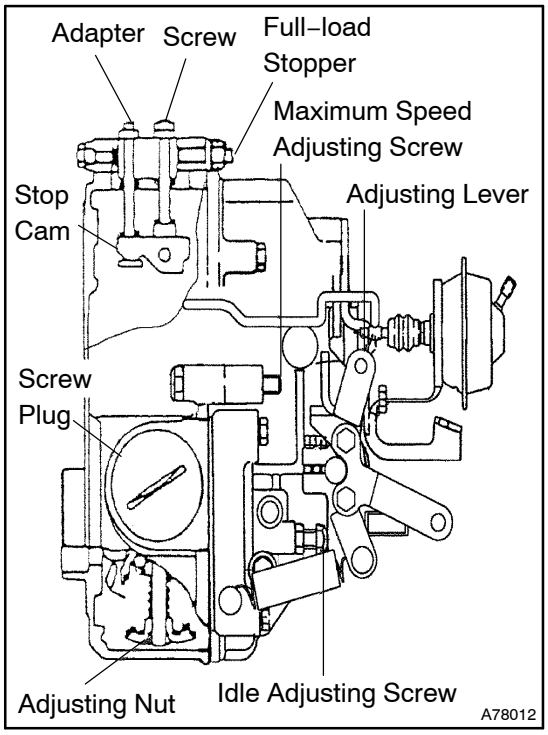
110QW–01

ADJUSTMENT

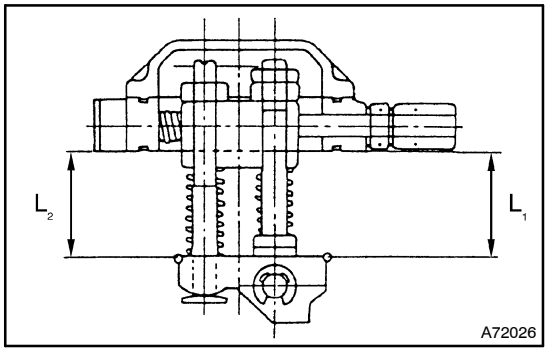
1. PREPARATION

(a) Connect the rack measuring devise to the control rack and set to ”0”.
(b) Connect the fuel line.
(c) Refill the camshaft chamber with engine oil.
(d) Install the angle gauge on the adjusting lever.
(e) Remove the full–load stopper housing cover.

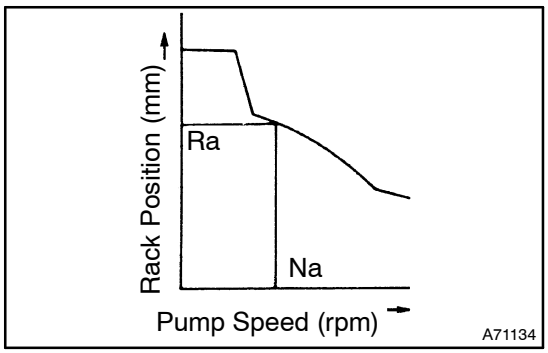


2. STEPS IN GOVERNOR ADJUSTMENT

(a) Perform governor testing and adjustment in the following sequence.
(b) Preliminary adjustment of stop cam
(c) Adjustment of idling speed control
(d) Preliminary adjustment of maximum speed control
(e) Adjustment of medium speed control
(f) Adjustment of maximum speed control
(g) Adjustment of fuel injection volume under full–load
(h) Inspection of stop lever operation



(i) Preliminary adjustment of stop cam
L_1 = L_2 = 23.5 mm (0.925 in.)



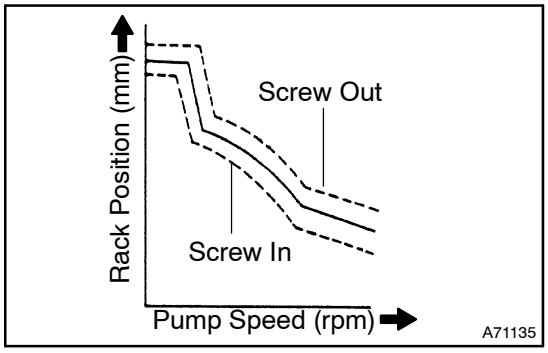
(j) Adjustment of idling speed control

NOTICE:

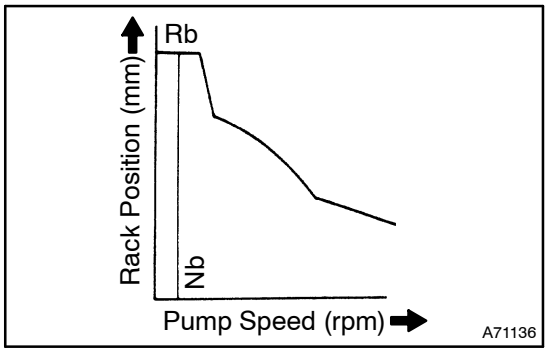
The adjusting lever should always be in the ”IDLING” position during adjustment of the idling speed control.

(1) At a pump speed of Na rpm, measure the control rack position Ra mm.

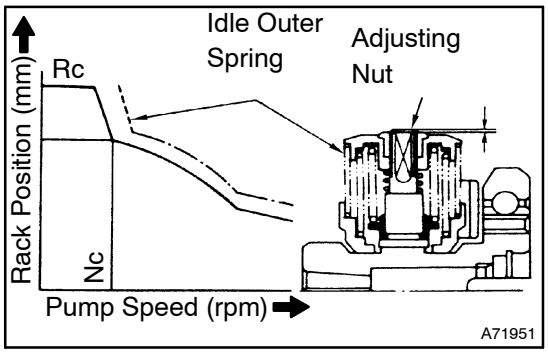
If not within specification, adjust with the idle adjusting screw.



NOTICE:
The idle adjusting screw will change the governor characteristics as shown on the left.



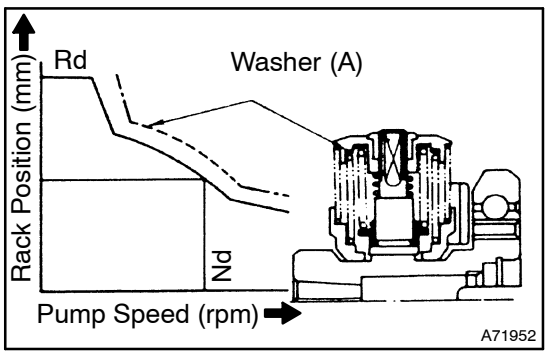
(2) At a pump speed of Nb rpm, measure the control rack position Rb mm.



(3) At a pump speed of Nc rpm, measure the control rack position Rc mm.

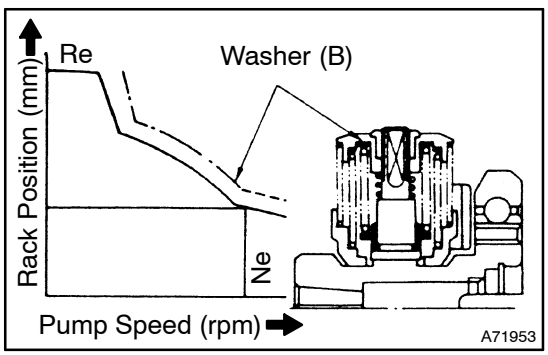
If not within specification, replace the idle outer spring.

NOTICE:
Protrusion of the adjusting nut should be within –0.4 mm (–0.015 in.) to 0.2 mm (0.007 in.).



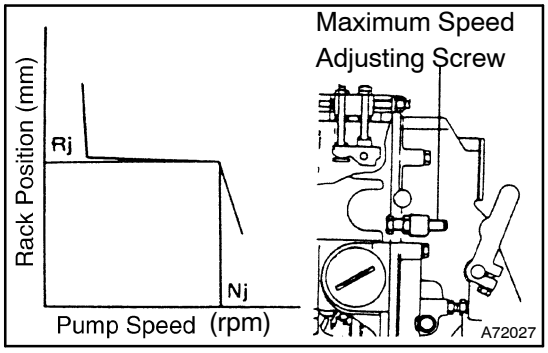
(4) At a pump speed of Nd rpm, measure the control rack position Rd mm.

If not within specification, replace the washer (A).



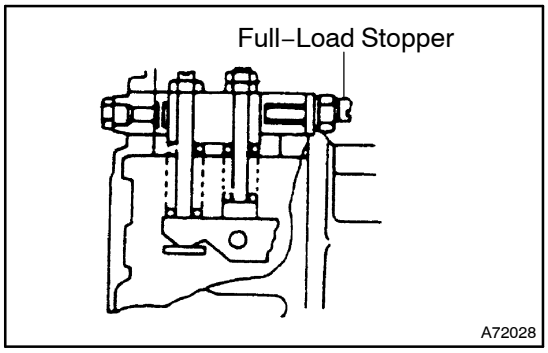
(5) At a pump speed of Ne rpm, measure the control rack position Re mm.

If not within specification, replace the washer (B).



(k) Preliminary adjusting of maximum speed control.
At the pump speed of Nj rpm, measure the control rack position Rj mm.

If not within specification, adjust with the maximum speed adjusting screw.



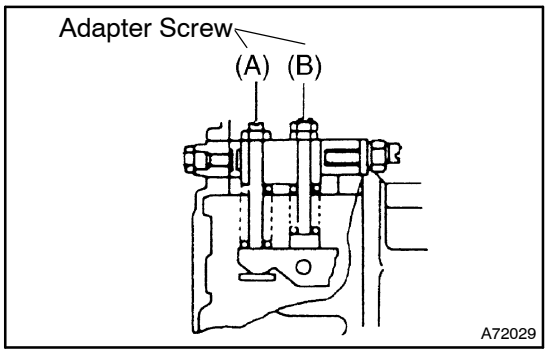
(l) Adjustment of medium speed control.

NOTICE:

The adjusting lever should always be in the "FULL–LOAD" position during adjustment of the medium speed control.

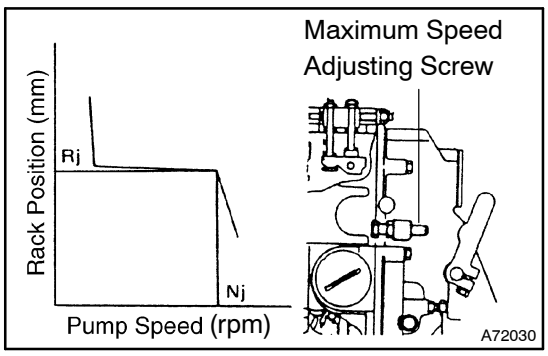
(1) At the pump speed of Nj rpm, measure the control rack position Rj mm.

If not within specification, adjust with the full–load stopper.



(2) At a pump speed of Ng, Nh and Ni rpm measure the control rack position Rg, Rh and Ri.

If not within specification, adjust within the adapter screw (A) and (B).



(m) Adjustment of maximum speed control.

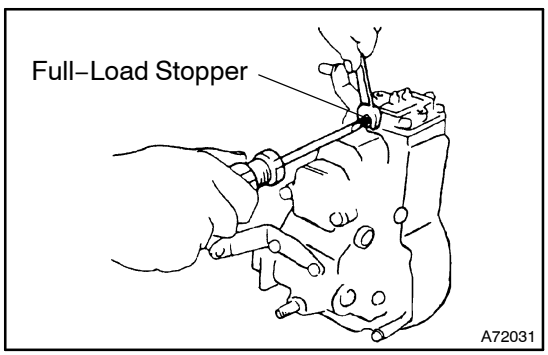
NOTICE:

Adjusting lever should be in the "FULL–LOAD" position.

(1) At the pump speed of Nj rpm, measure the control rack position Rj mm.

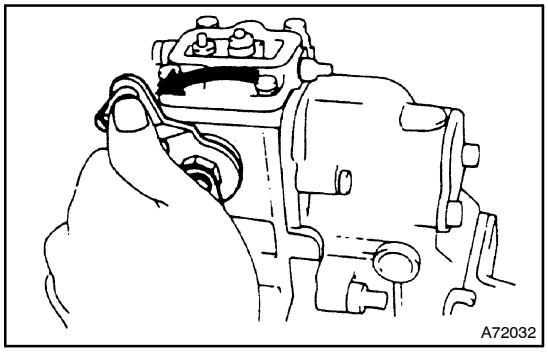
If not within specification, adjust with the maximum speed adjusting screw.

(2) Confirm the rack position Rm and Rn mm, with at a pump speed Nm and Nn r/min.

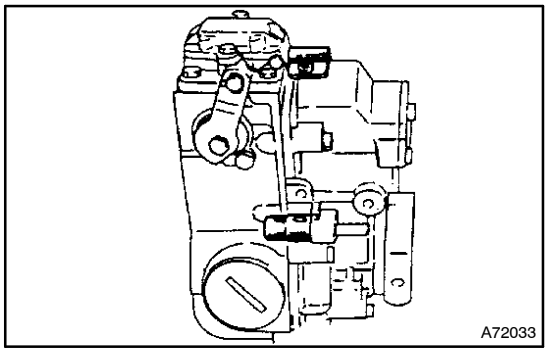


(n) Adjusting of fuel injection volume under "FULL–LOAD".
Measure the injection volume in the "FULL–LOAD" position.

If the average injection volume is not at standard value, adjust with the "FULL–LOAD" stopper.



(o) Inspection of stop lever operation.
Adjusting lever at ”IDLING” position and pump speed at ”0” rpm, the control rack position should be less than Rq mm.



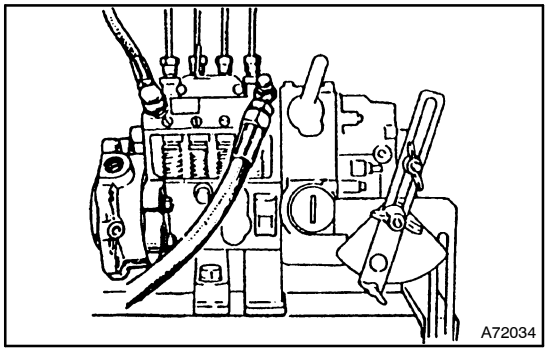
3. INSTALL FULL–ROAD STOPPER HOUSING COVER AND FULL–ROAD STOPEER CAP

4. GOVERNOR EXTENAL LEAD SEAL AND CRIMP CAPS

NOTICE:

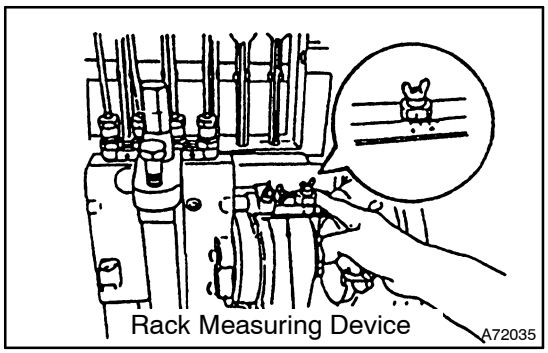
All adjusting devices on the fuel injection pump governor, except the low idle adjustment screw, are wired and lead sealed and crimp cap as a protection for the customer.

This is to prevent unauthorized readjustment which may cause engine malfunction and/or engine failure. Periodically check to insure that these seals are not broken as this will void the warranty.



5. PREPARATION

(a) Mount the injection pump correctly on the pump tester.



(b) Attach a rack measuring device to the control rack and set to ”0”.

(c) Install calibration nozzles and lines of the following specifications.

(1) Nozzle

Nozzle type: 12SD12

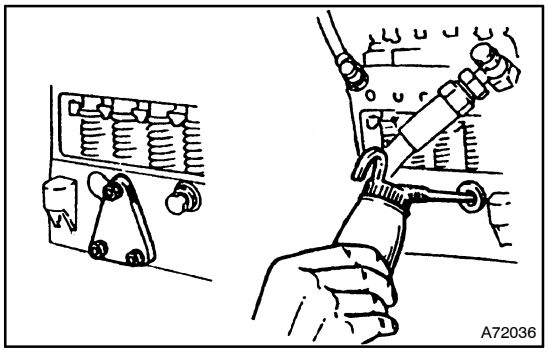
Opening pressure:

17.16 MPa (175 kgf·cm^{2,} 2,490 psi)

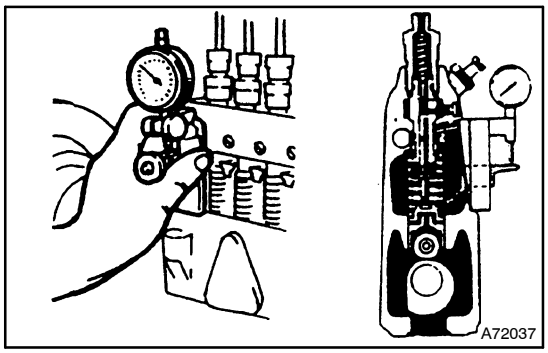
(2) Line

Outside diameter: 6.0 mm (0.24 in.)
Inner diameter: 2.0 mm (0.08 in.)
Length: 600 mm (23.6 in.)

(d) Calibration oil
(1) Calibration oil: SAE J967C
(2) Oil temperature: 40 – 45°C (104 – 113°F)

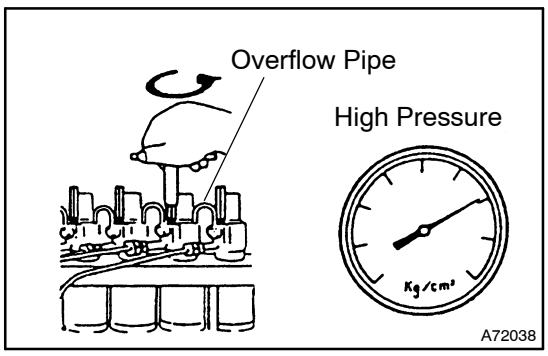


(e) Install the cover on the feed pump mounting surface and fill the pump camshaft chamber with engine oil.

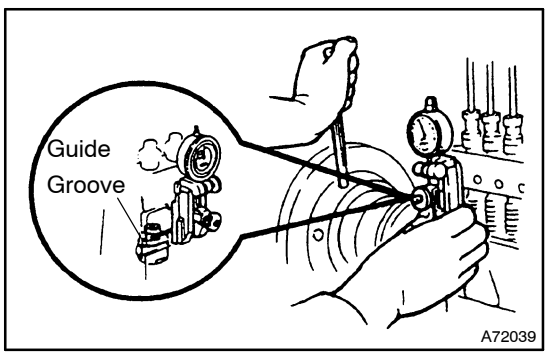


6. ADJUST INJECTION TIMING

(a) Preparation of the pre–stroke.
(1) Remove the plate cover.
(2) Install a pre–stroke measuring instrument.
Bring the tappet of the first cylinder to its bottom dead center, and set the pointer trip on the tappet.

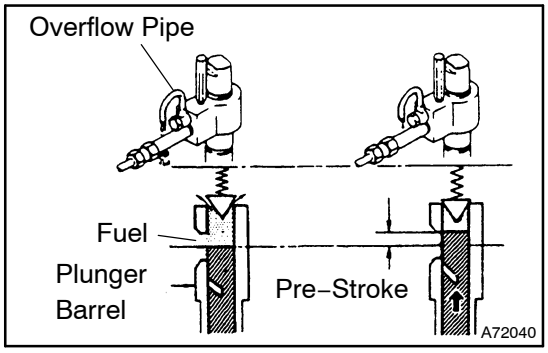


(b) Measure the pre–stroke (No. 1 plunger)
(1) Set the control rack at full–load position.
(2) Loosen the overflow screw of each nozzle holder.
(3) Operate the high–pressure pump of the pump tester and let fuel run out of the overflow line.

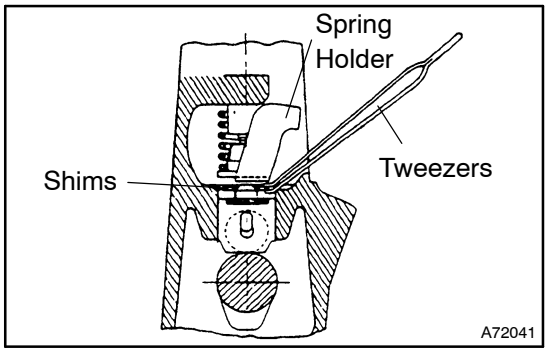


(4) Move the angle dial to set the first cylinder of the pump to bottom dead center and adjust the pre–stroke gauge to zero.

NOTICE:
Bottom dead center is the point at which the pointer of the dial gauge does not move even when the angle dial is rotated while fuel is flowing from the overflow line.

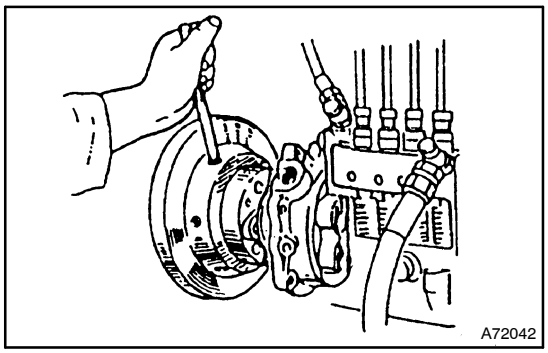


(5) Turn the camshaft clockwise with the angle dial and read the dial gauge when the fuel stops running out of the overflow line. This reading is the pre–stroke value of the pump.



(6) If the pre–stroke value is not within specification, adjust by changing the tappet adjusting shim.

SST 09280–46010

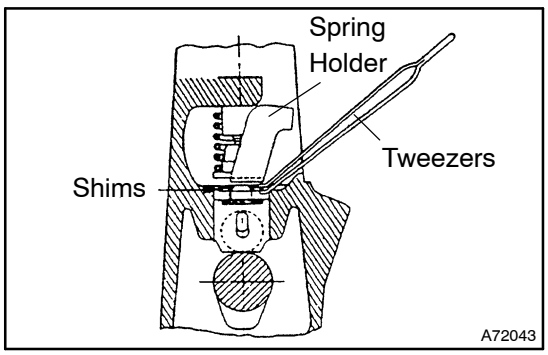


7. ADJUST INJECTION INTERVAL

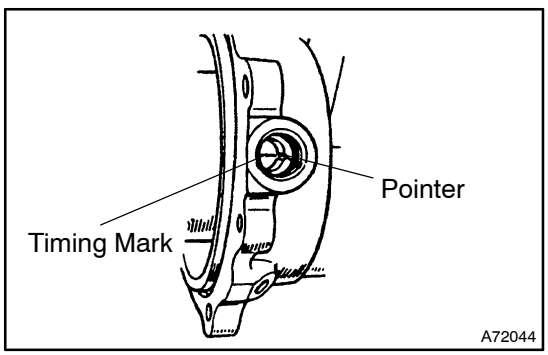
(a) Using the No. 1 cylinder injection starting point as a base, inspect and adjust the injection interval in the order of injection.

Injection interval: 89° 45' – 90° 15'

Injection order: 1 – 3 – 4 – 2

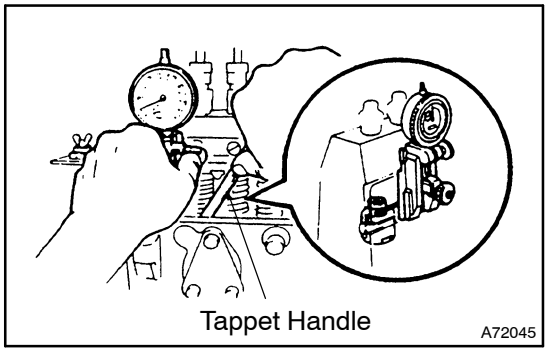


(b) If the injection intervals are not within specification, adjust by using the same procedure as for pre–stroke adjustment.



(c) Set the No. 1 cylinder at the injection starting point, and check that the marks on the timer and the marks on the pump body are aligned.

If the timing marks are not aligned, make a new mark on the timer and erase the old mark.

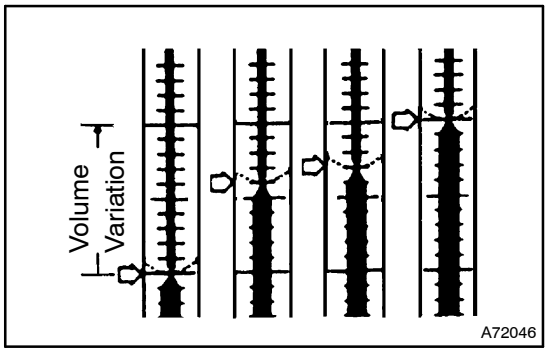


8. CHECK TAPPET TOP CLEARANNCE

(a) Set the No. 1 cylinder at the injection starting point, then move the tappet with SST.
SST S0951–21410
Tappet Top Clearance: More than 0.2 mm (0.0079 in.)

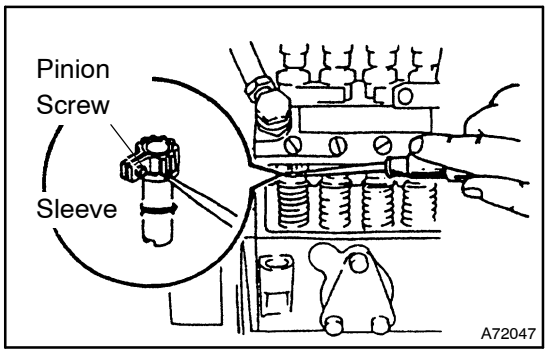
(b) Follow the above procedure to check the other cylinders (No. 2 through No. 6).

If the tappet clearance is less than 0.2 mm (0.0079 in.), recheck the pre–stroke.



9. ADJUST INJECTION VOLUME

(a) Measure the injection volume for each control rack position and pump revolution.



(b) To adjust the injection volume, loosen the pinion screw and insert the adjusting pin into the hole in the control sleeve, then move the sleeve slightly.