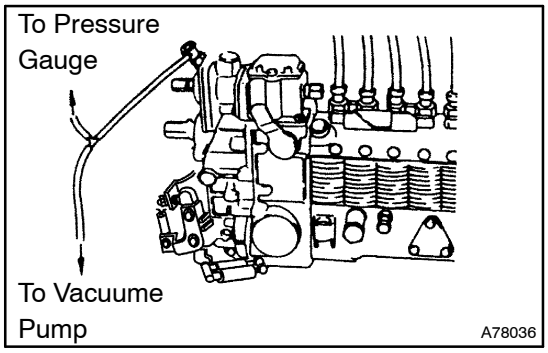
110QK–01

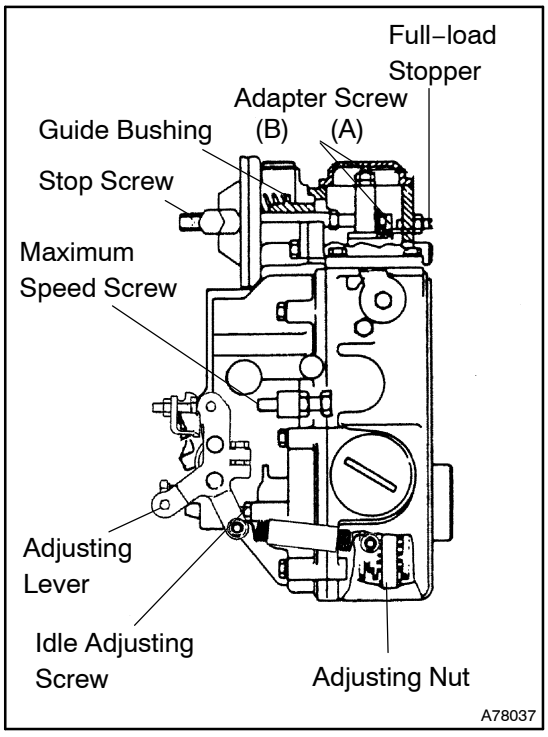
ADJUSTMENT

1. PREPARATION

(a) Connect the rack measuring device 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.

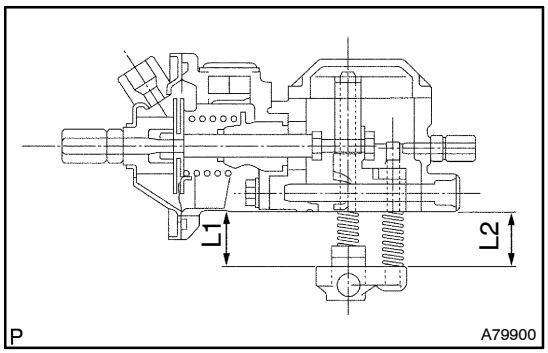


(f) Connect the boost line to the boost compensator port from the vacuum pump on a test bench via a ”T” connection to a pressure gauge.

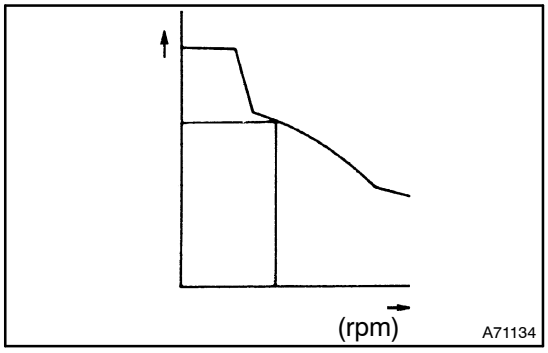


2. STEPS IN GOVERNOR ADJUSTMENT

(a) Perform governor testing and adjustment in the following sequence.
(1) Preliminary adjustment of stop cam
(2) Adjustment of idling speed control
(3) Preliminary adjustment of maximum speed control
(4) Adjustment of medium speed control
(5) Adjustment of maximum speed control
(6) Adjustment of fuel injection volume under full–load
(7) Inspection of stop lever opperation



(b) Preliminary adjustment of stop cam.
L1 = L2 = 25.5 mm (1.004 in.)



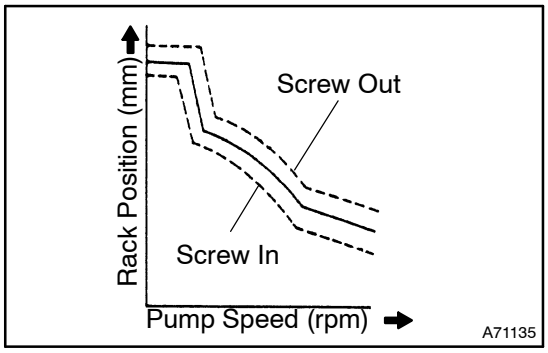
(c) Adjustment of idling speed control.

NOTICE:

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

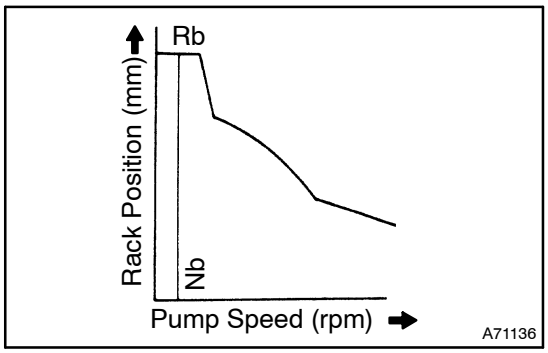
(1) At a pump speed of Na rpm, measure the control rack position Ra mm.

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

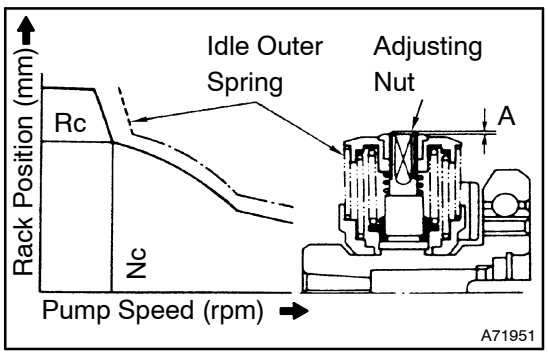


NOTICE:

The idle adjusting screw will change the governor charcteristics as shown on the left.



(2) At a pump speed of Nb rpm, measure the control 7racks position Rb mm.



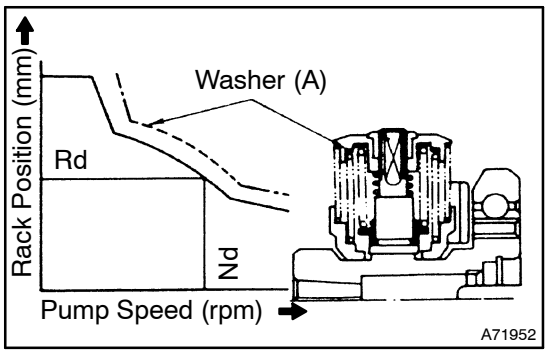
(3) At a pump speed Nc rpm, measure the control rack position Rc mm.

If not within specification, replace the idle outer spring.

NOTICE:

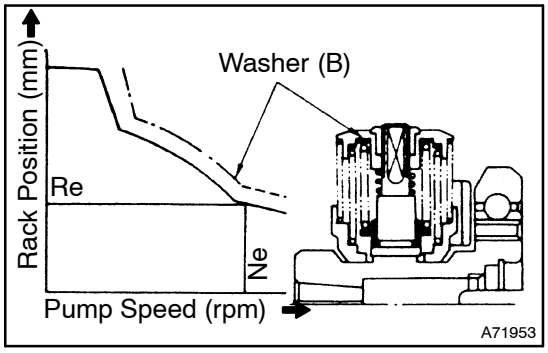
Protrusion of the adjusting nut should be within –0.4 mm (–0.016 in.) to 0.2 mm (0.008 in.).

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



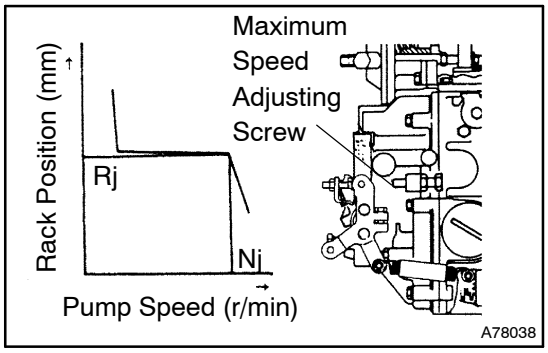
If not within specification, replace the washer (A).

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



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

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



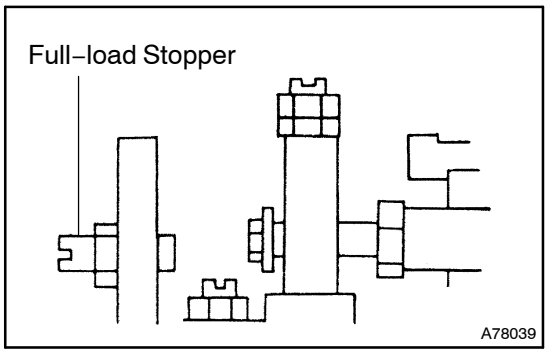
(d) Preliminary adjusting of maximum speed control

(1) Apply a 13.3 kPa (100 mmHg) boost pressure to the boost compensator.

(2) The adjusting lever should be in the ”FULL–LOAD” position.

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

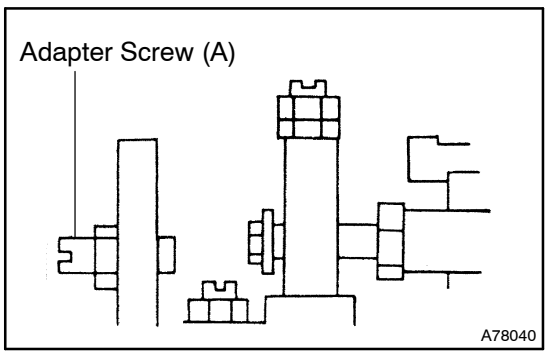
If not within specification, adjust with the maximum speed adjusting screw.



(e) Adjustment of medium speed control

NOTICE:

- **The adjusting lever should always be in the ’FULL–LOAD’ position during adjustment of the medium speed control.**
- **Apply a 13.3 kPa (100 mmHg) boost pressure to the boost compensator.**

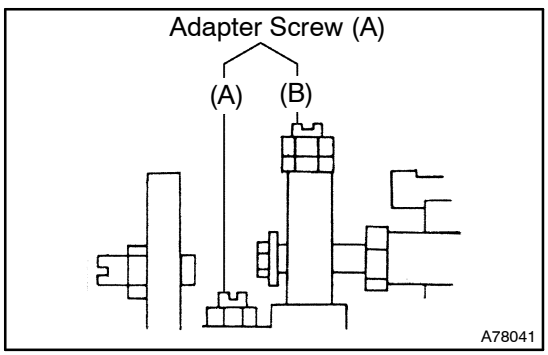


(1) At a pump speed of Nf rpm, measure the control rack position Rf mm.

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

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

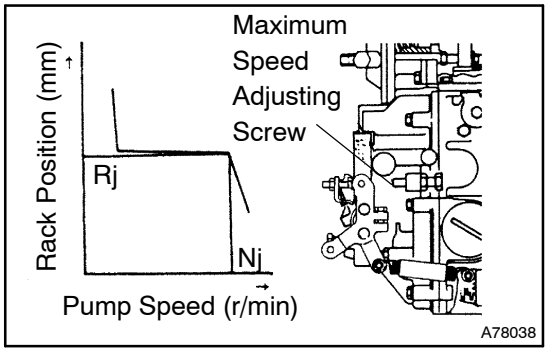
If not within specification, adjust with the adapter screw (A).



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

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

(4) Confirm the rack position Ri mm with at a pump speed of Nj rpm.



(f) Adjustment of maximum speed control

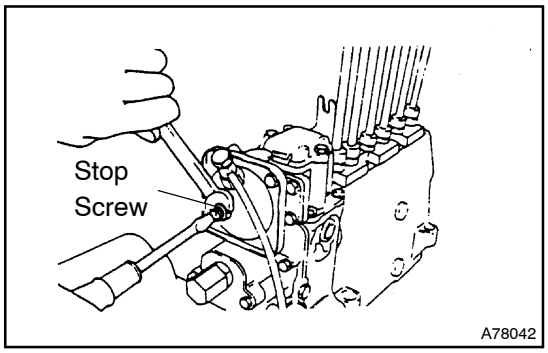
NOTICE:

- **The adjusting lever should always be in the 'FULL–LOAD' position.**
- **Apply a 13.3 kPa (100 mmHg) boost pressure to the boost compensator.**

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

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

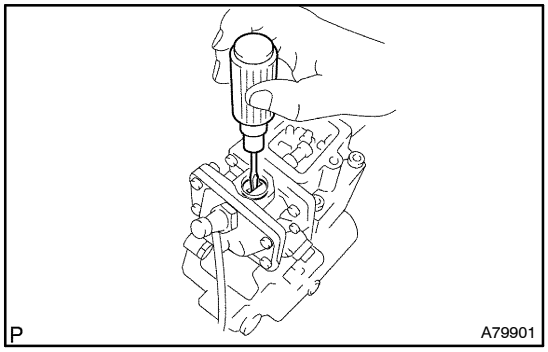
(2) Confirm the rack position Rm and Rn mm, with at a pump speed Nm and Nn rpm.



(g) Adjustment of the boost compensator

NOTICE:

The adjusting lever should be in the 'FULL–LOAD' position during adjustment of the boost compensator.

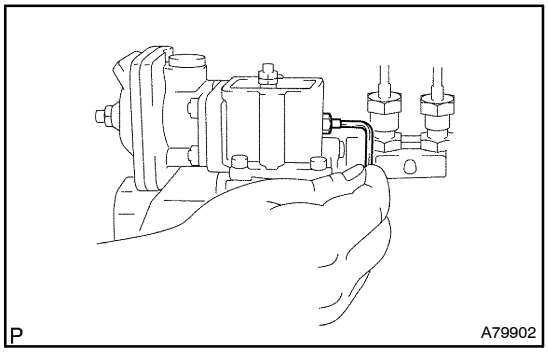


(1) Without boost pressure, at a pump speed of 300 rpm, measure the injection volume and read the rack position.

If not within specification, adjust the volume with the stop screw.

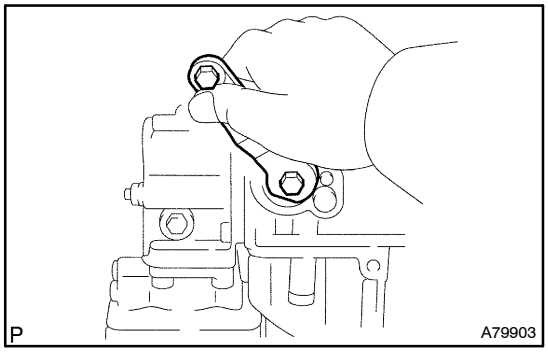
(2) Apply a boost pressure to the boost compensator. At a pump speed of 300 rpm, adjust with the guide bushing to adjust the rack position.

(3) Apply a boost pressure to the boost compensator. At a pump speed of 300 rpm, confirm the rack position.



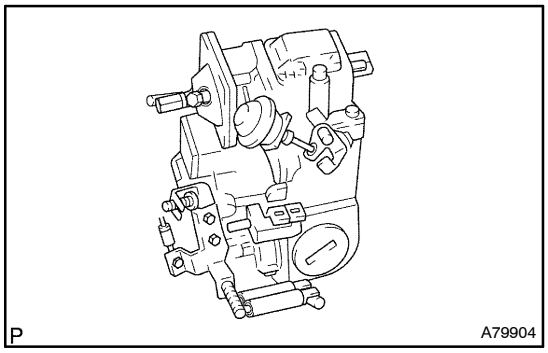
(h) Adjusting of fuel injection volume under "FULL–LOAD". Measure the injection volume in the "FULL–LOAD" position. Apply a P mmHg boost pressure to the boost compensator.

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



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

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



4. GOVERNOR EXERNAL LEAD SEALS AND CRIMP CAPS

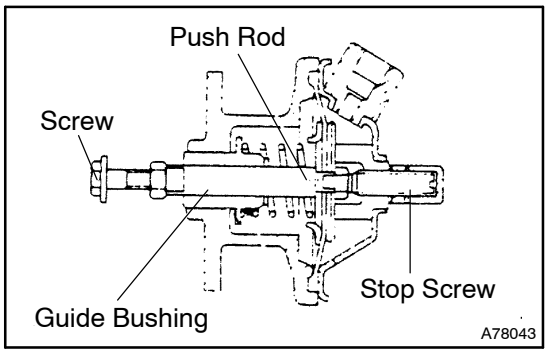
NOTICE:

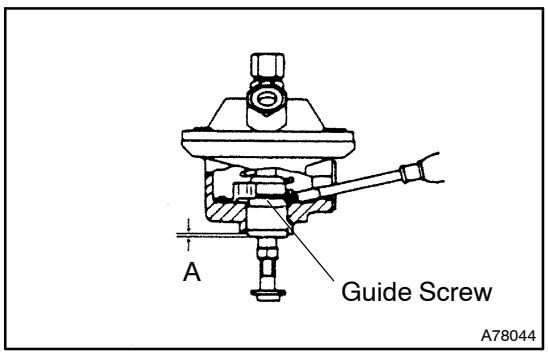
All adjusting devices on the fuel injection pump governor, except the low idleadjustment screw, are wired and lead sealed and crimp capped as a protection for the customer. This is to prevent unauthorized readjustment which may cause engine malfunction and/or engine failure.

Preiodically check o insure that these sealsare not broken as his will void the warranty.

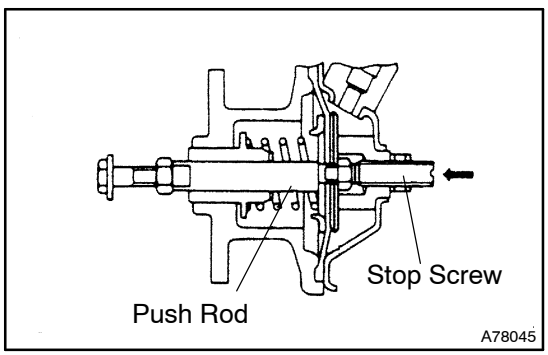
5. PRE–ADJUSTMENT OF BOOST COMPENSATOR

(a) Before installing the boost compensator on the full–load stopper housing, should be pre–adjustment the boost compensator as follows.

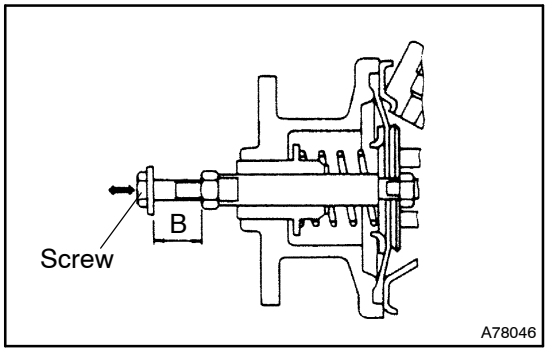




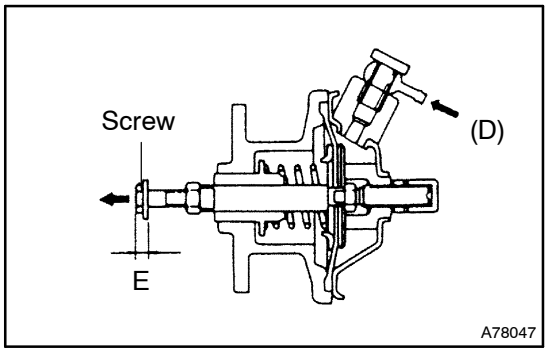
(b) Turn the guide bushing with a screw driver inserted through the screw plug hole and set the ”A” clearance to zero.



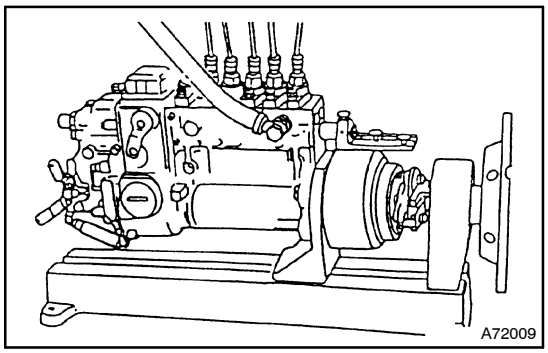
(c) Tighten the stop screw until it comes in contact with the push rod end, then further tighten the stop screw by 1/2 turn.



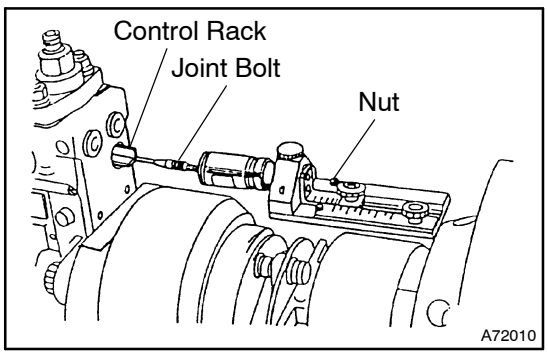
(d) Set length ”B” by means of the adjust with screw indicated in figure.
Length ”B”: 13.5 mm (0.531 in.)



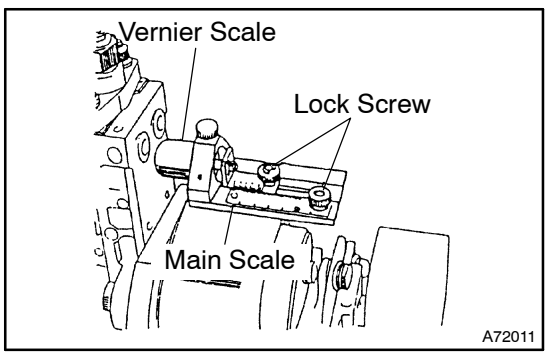
(e) Check screw traveling length, ”E” while apply 133.3 kPa (1,000 mmHg) boost pressure to port ”D”.
Traveling length ”E”: 4 – 5 mm (0.158 – 0.196 in.)
(f) Check the boost compensator air seal. While applied 133.3 kPa (1,000 mmHg) boost pressure to port ”D” the time required for pressure to drop to 130.7 kPa (980 mmHg) should be more than 10 seconds.



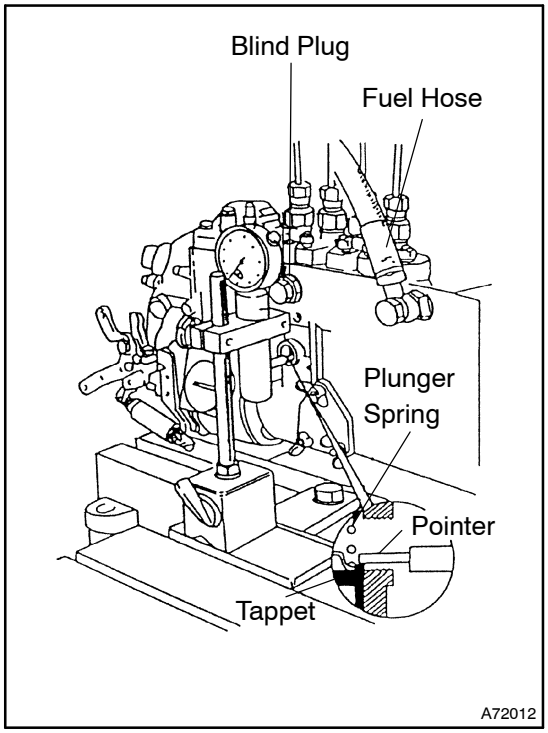
6. PREPARATION
(a) Mount the injection pump correctly on the pump tester.



(b) Attach a rack measuring device to the control rack and set to Zero.
Part No. 95091–00170 for equiped with R901 governor
(c) Install calibration nozzles and lines.



(d) Fill the pump camshaft chamshft chamber with engine oil.



7. ADJUST INJECTION TIMING

(a) Preparation of the pre–stroke

(1) Remove he screw plug from the pre–stroke measuring hole of he first cylinder.

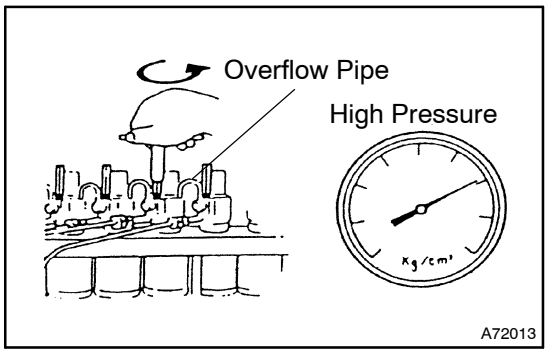
(2) Remove the overflow valve, attach the inlet adaptor and connect the fuel hose of the pump tester. Close the fuel port of the injeccion pump with a blind plug.

(3) Insall a pre–stroke measuring instrument. Bring the tappet of the first cylinder to its bottom dead center, and set the pointer tip on the tappet.

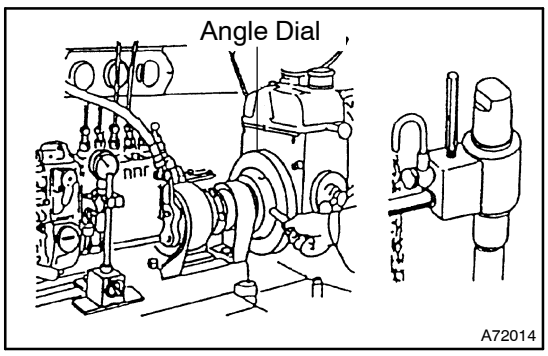
(b) Measure the pre–stroke (No. 1 plunger)

(1) Set the control rack at full–load position.

(2) Loosen the overflow screw of each nozzle holder.



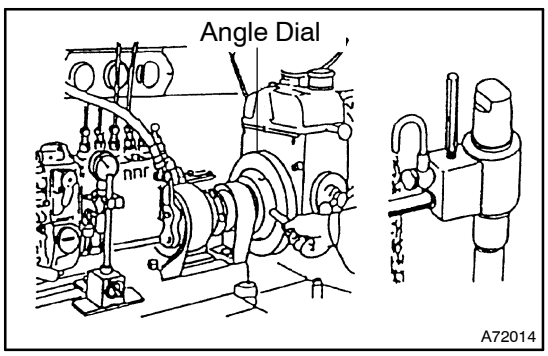
(3) Operate the high–pressure pump of the pump tester and let fuel run out of the overflow line.



(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.

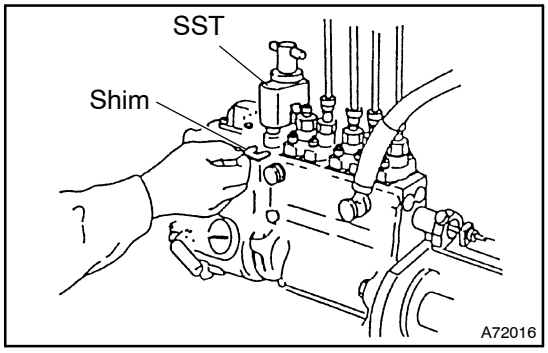
NOTICE:

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.

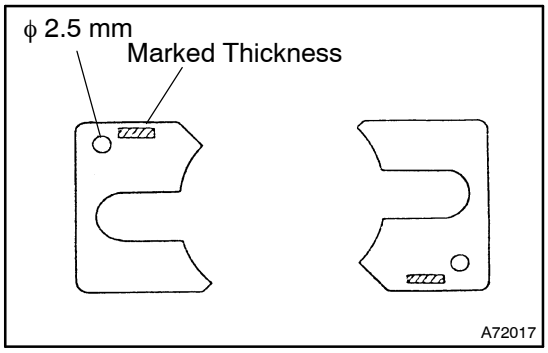


(5) Turn the camshaft clockwise the angle dial and read the dial gauge when the fuel stops running out of the overflow line. This reading is the pre–stroke value of the pump.

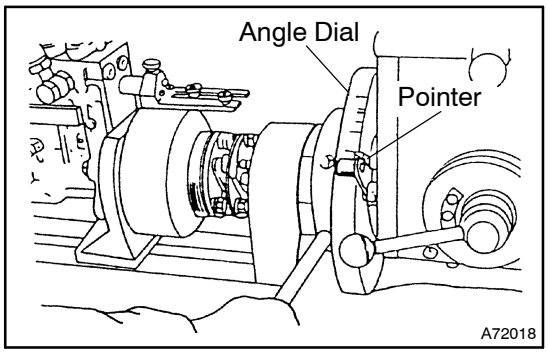
If the pre–stroke value is not within specification, change the shims between the clynder flange and the pump housing.



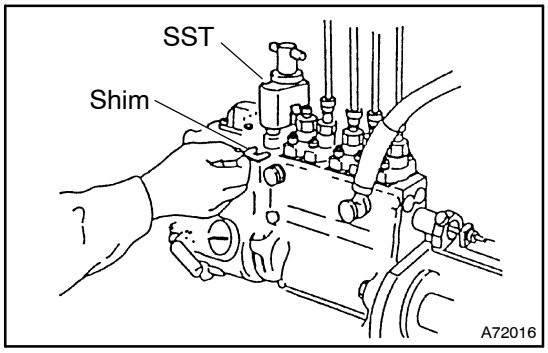
(c) Adjust the pre–stroke.
(1) Use SST to lift the cylinder and install the proper shim.
SST S0951–21920



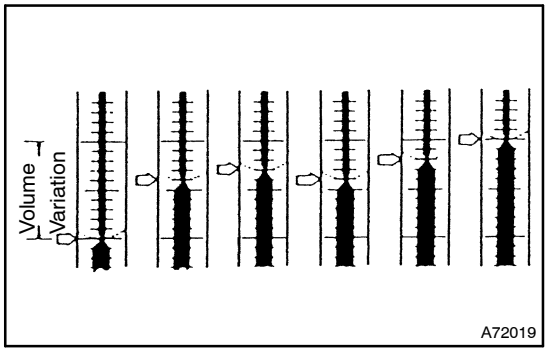
NOTICE:
- **Insert a pair of shims of same hickness to the cylinder (If different thickness shims are used the rack will not move smoothly and hunting and other problems will result).**
- **Use only on e shim on each side.**
- **Always install the shims with the thickness marking facing up.**



(d) Adjust the injection interval.
(1) 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
(2) If the injection intervals are not within specification, adjust by using the same procedure as for pre–sroke adjustment.
(3) After adjustment, make sure the injection timing is correct.

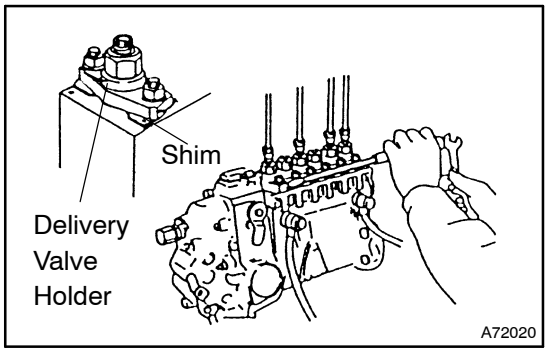


(e) Measuring and adjusting the injection volume
(1) Connect the fuel line and the overflow valve in their correct positions.



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

(1) To adjust the injectiojn volume, loosen the delivery valve holder tightening nut and rotate the delivery valve holder.



(2) After adjustment has been completed tighten the nuts altenately to torque.

Torque:
19.1 N·m (195 kgf·cm, 14 ft·lbf)

8. INSPECT TIMER ADVANCE

(a) Set a stroboscope on a pump tester.

(b) Check the timer advance.

If the angle in not within specification, adjust with an appropriate shim.