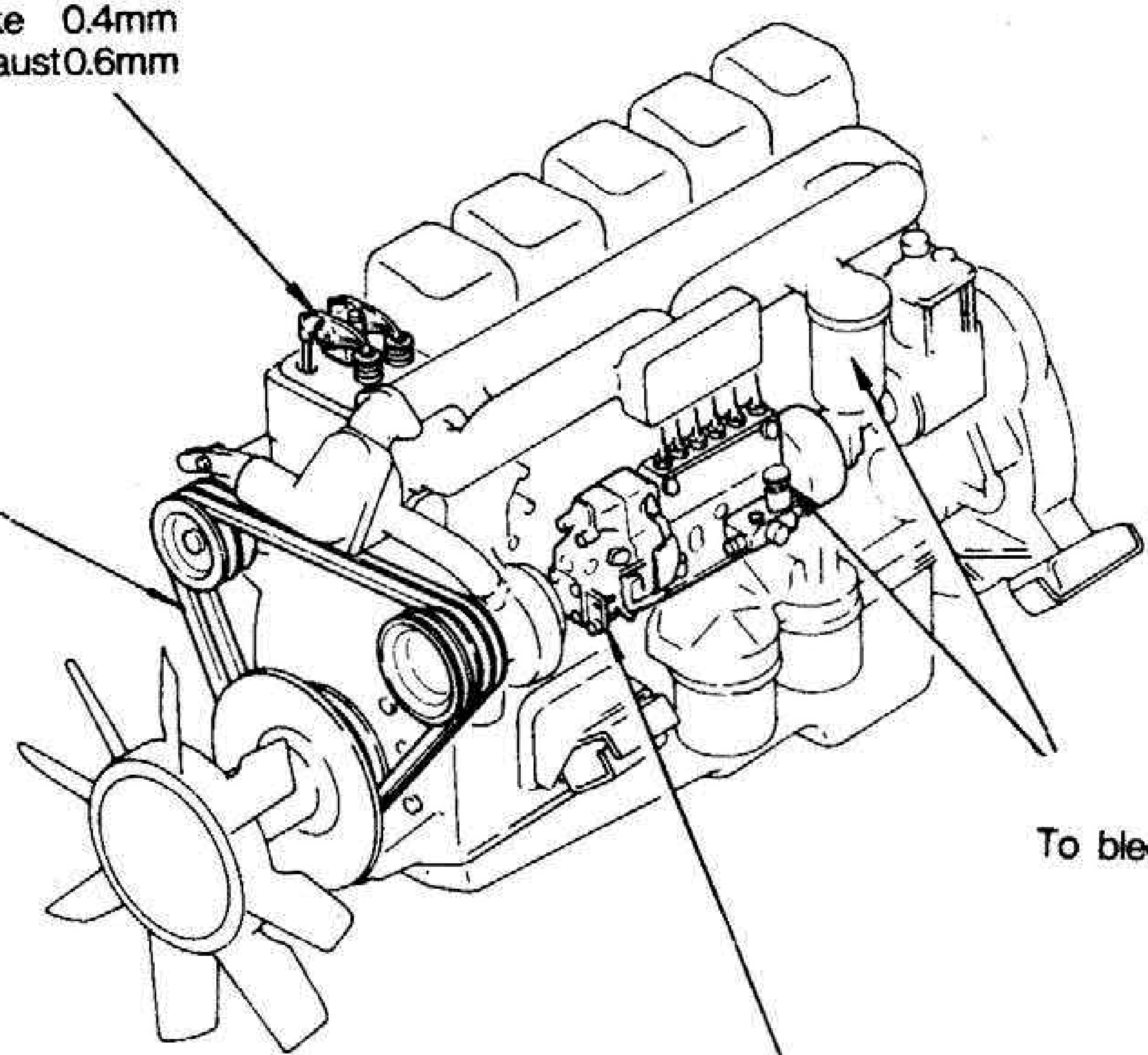


5-1 ENGINE ADJUSTMENT

Valve clearance
NV
Intake 0.4mm
Exhaust 0.6mm

Belt Tension
(deflection of belt
when pressed down
at middle under
approx. 98 N or
10kgf pressure)
NV 10 to 15mm



To bleed fuel system

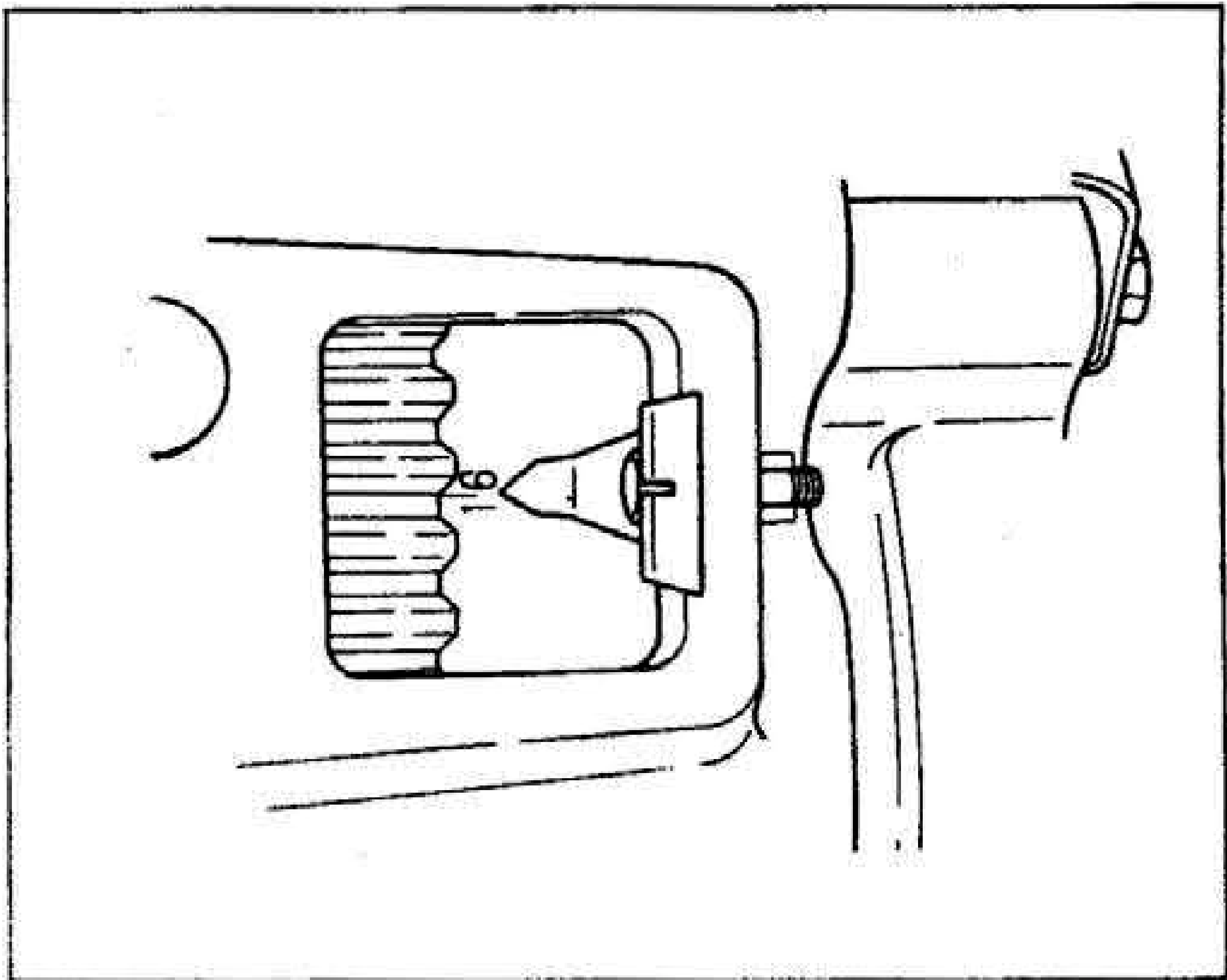
- Fuel injection timing
 - No-load minimum speed (Idling)
 - No-load maximum speed
- NV All three items vary on different specifications.

NV---Nominal Value

5-1-1 Inspection and Adjustment of Valve Clearance

Check and adjust the valve clearance as described below when the engine is cold.

- (1) Crank the engine to align the inscribed line 1.6 on the flywheel housing with the pointer of the inspection window in flywheel housing. The piston in the cylinder where the push rod is not pushing the rocker up is at the top dead center on the compression stroke.
- (2) If the piston in the No. 1 cylinder is at the top dead center on the compression stroke, check and adjust the valves marked ○ in the following table. If the piston in the No. 6 cylinder is at the top dead center on the compression stroke, check and adjust the valves marked × in the following table.



Crank the engine another rotation and check and adjust the valve clearance of all the valves.

Cylinder No.	1		2		3		4		5		6	
Valve arrangement	In.	Ex.	In.	Ex.	In.	Ex.	In.	Ex.	In.	Ex.	In.	Ex.
Piston in No. 1 cylinder at TDC on compression stroke	○	○	○			○	○			○		
Piston in No. 6 cylinder at TDC on compression stroke				×	×			×	×		×	×

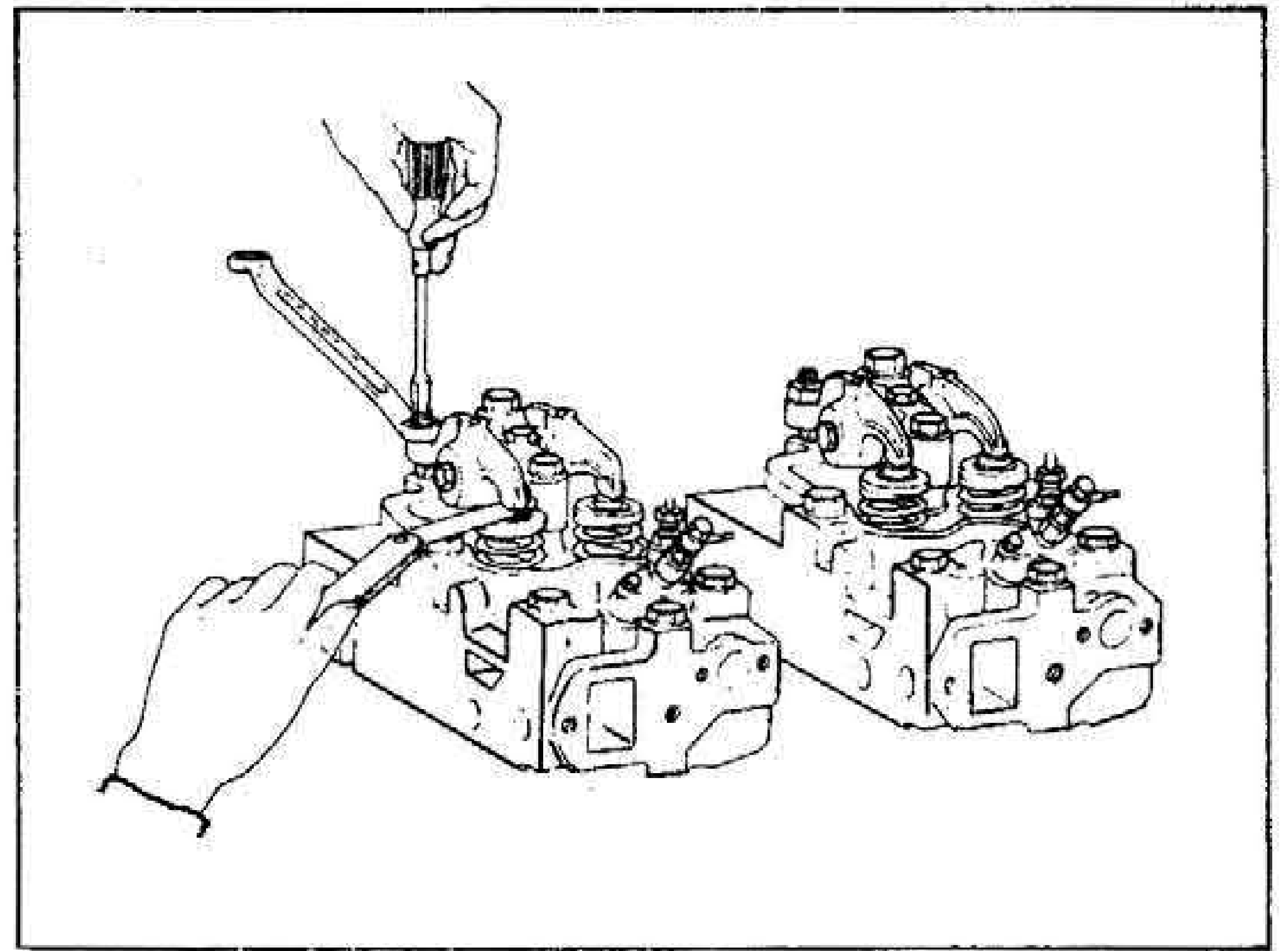
- (3) Measure the clearance between the rocker arm and valve cap with a thickness gauge to determine whether it is up to specification.

If the thickness gauge having the normal thickness fits in the clearance somewhat tightly, then the clearance is good.

If the clearance is out of the nominal value, loosen the lock nut and adjust the clearance with the adjusting screw.

After the clearance has been adjusted, tighten the lock nut to secure the adjusting screw.

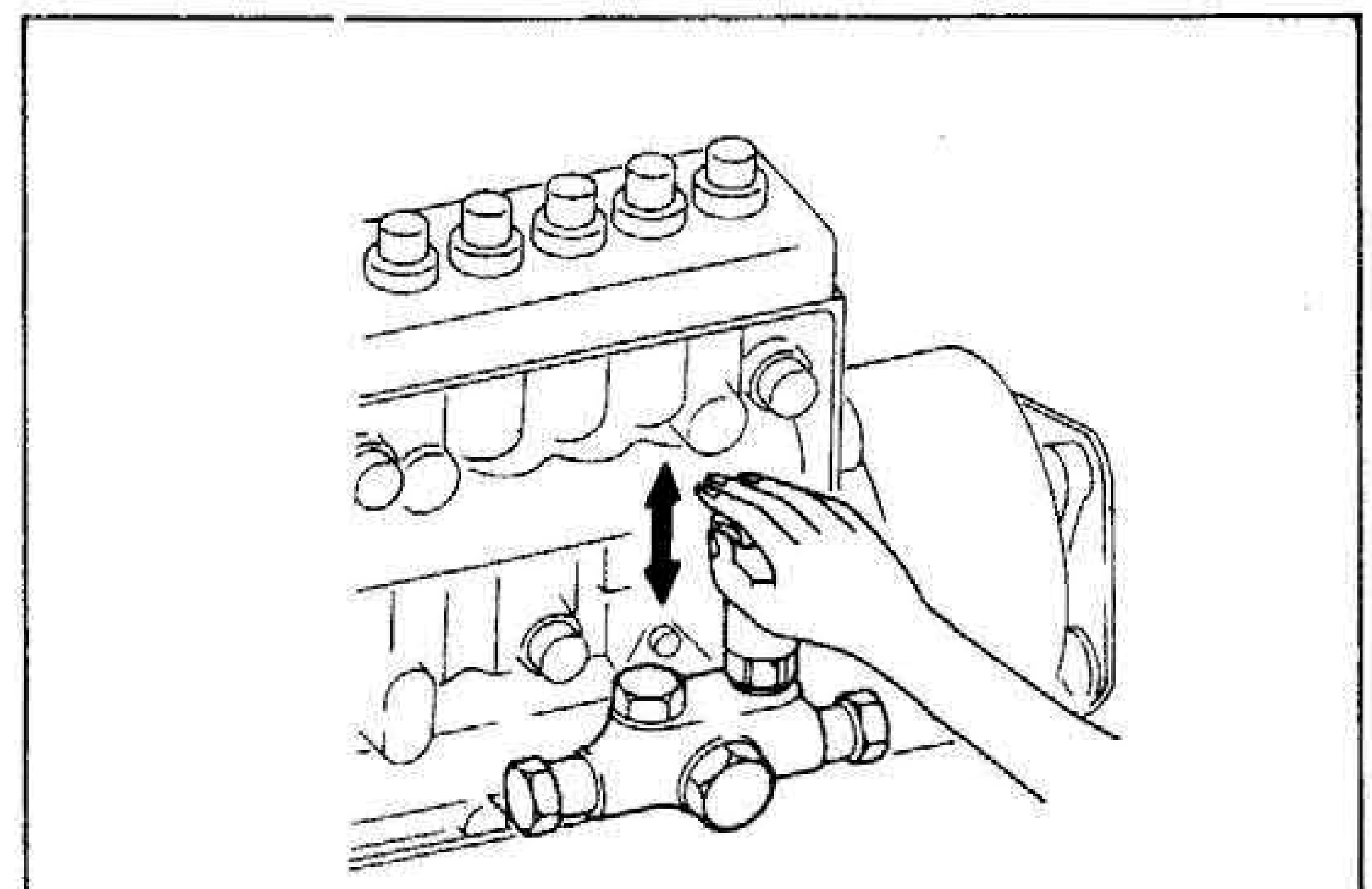
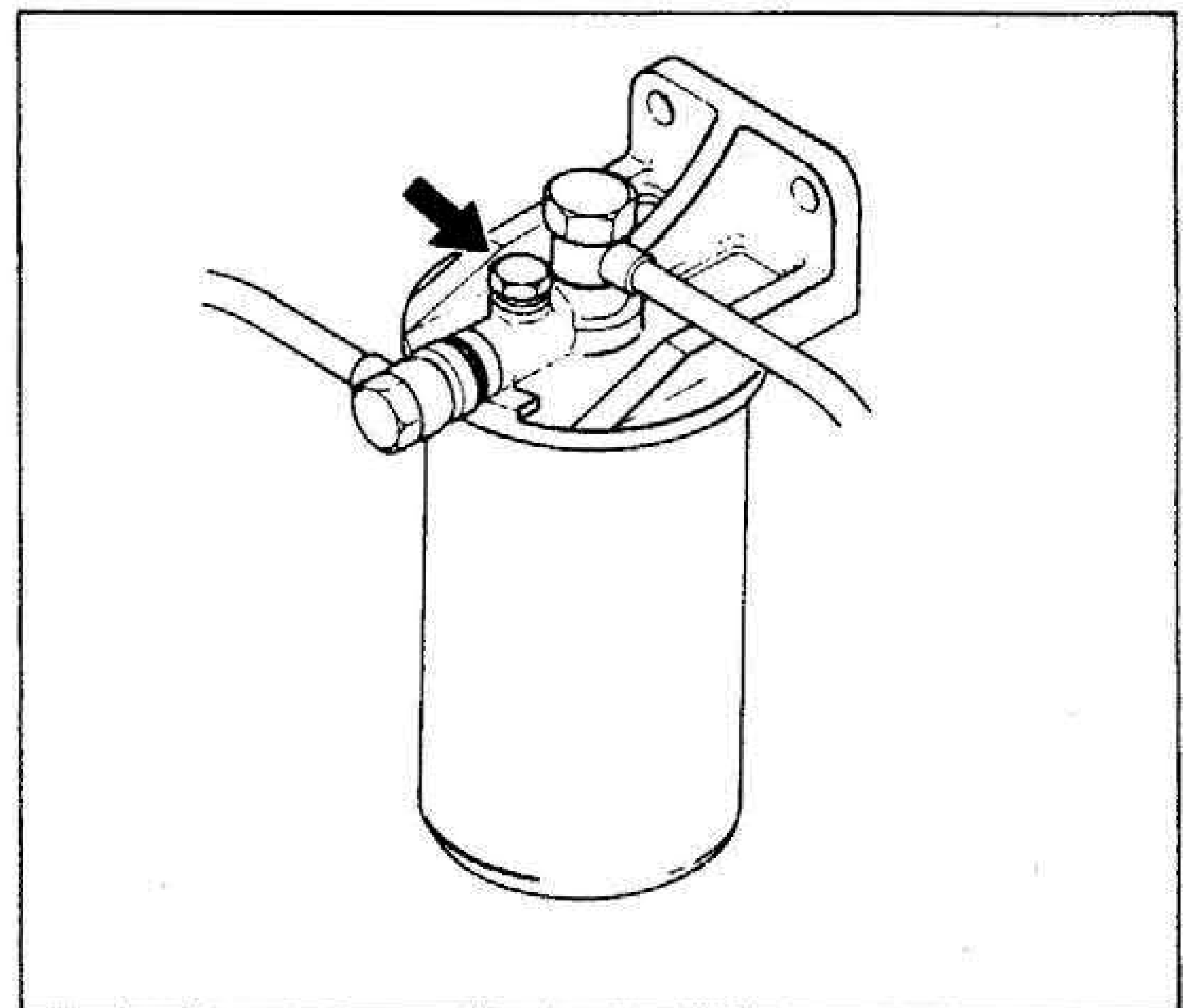
NOTE : After the lock nut has been tightened, recheck the clearance.



5-1-2 Bleeding Fuel System

Bleed the fuel system as described below.

- (1) Loosen the air plug of the fuel filter.
- (2) Turn the priming pump knob of the injection pump counterclockwise to let the knob float up.
- (3) Move the priming pump knob up and down by hand to force the fuel out until no air bubbles come out from the air plug.
- (4) After air bubbles have ceased to come out in the fuel, firmly tighten the air plug.
- (5) Move the priming pump knob several times up and down and turn down the knob, while pressing it down.



NOTE : Make sure that fuel spilt around is thoroughly wiped away.

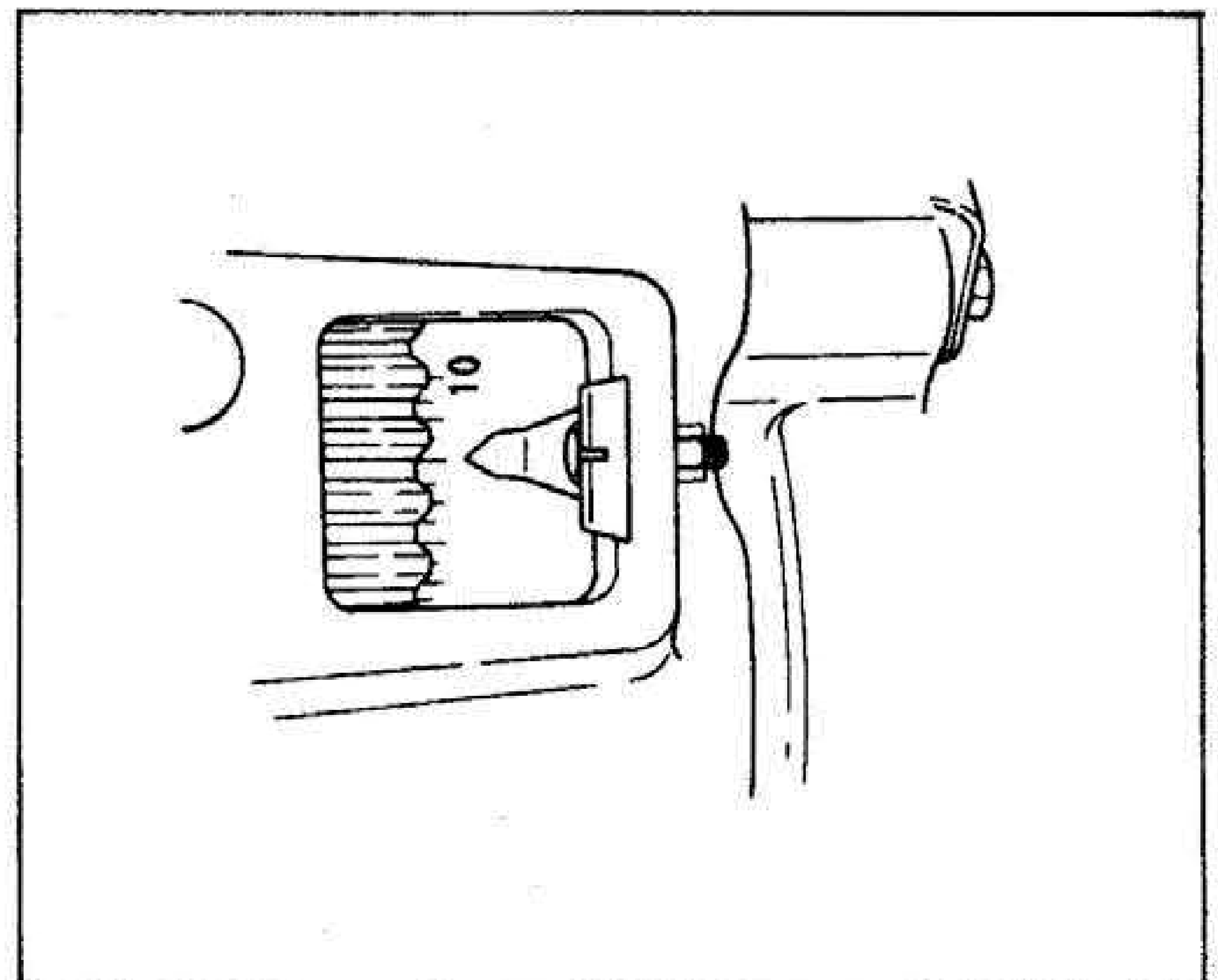
- (6) .Operate the starter to exhaust the air from inside the injection pump and injection pipe.

NOTE : Do not operate the starter continuously for more than 15 seconds.

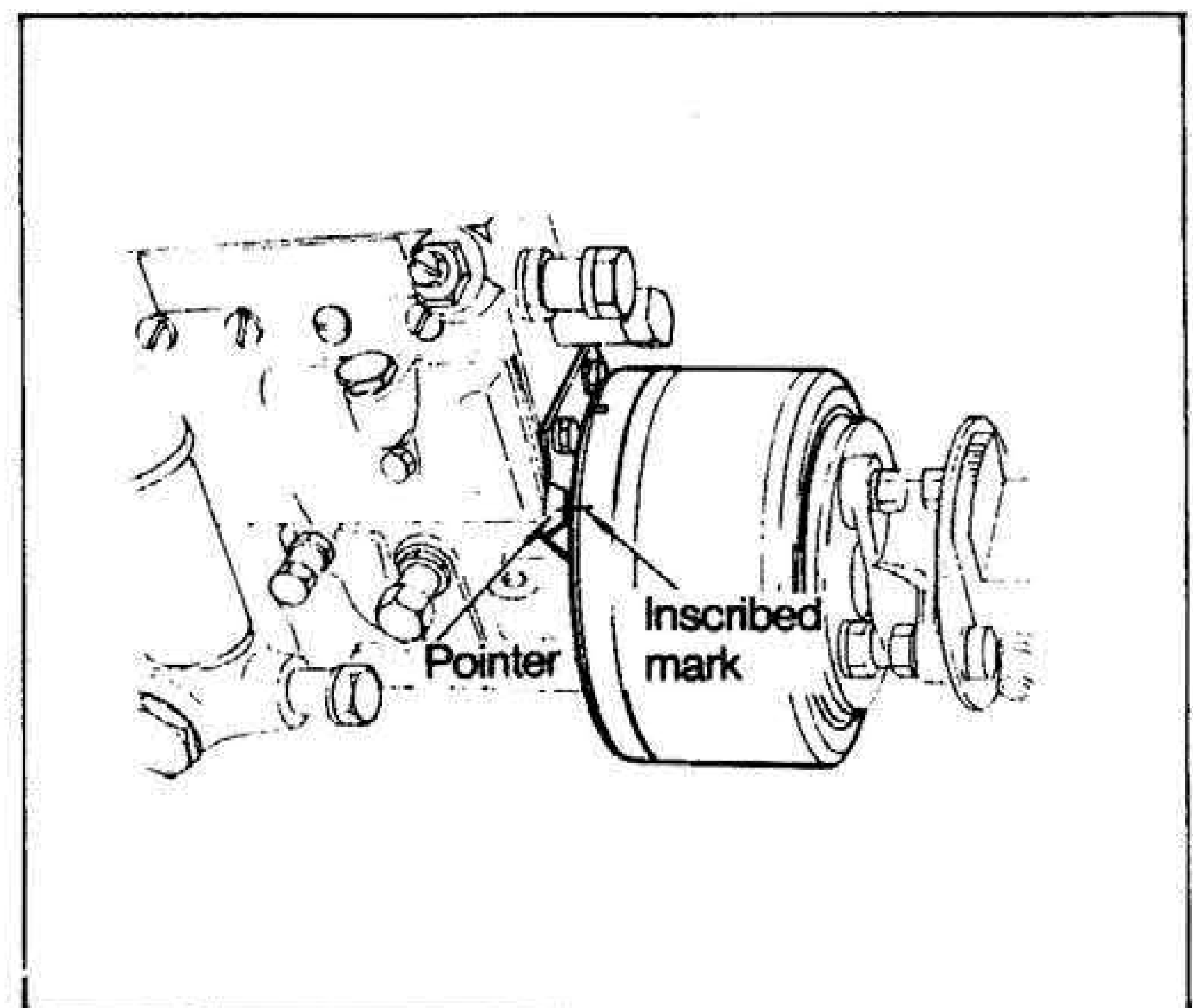
5-1-3 Inspection and Adjustment of Fuel Injection Start Timing

- (1) Crank the crankshaft more than 180° in normal direction to align the fuel injection start timing angle scale inscribed on the periphery of the flywheel with the pointer.

NOTE : If the engine is reversed (by cranking or when it is stopped), the automatic timer will stay operated in advancing direction and will not readily return to normal even if it is made to resume normal operation by turning the engine in normal direction for a while. Make sure that the crankshaft is cranked more than 180° in normal direction by hand.



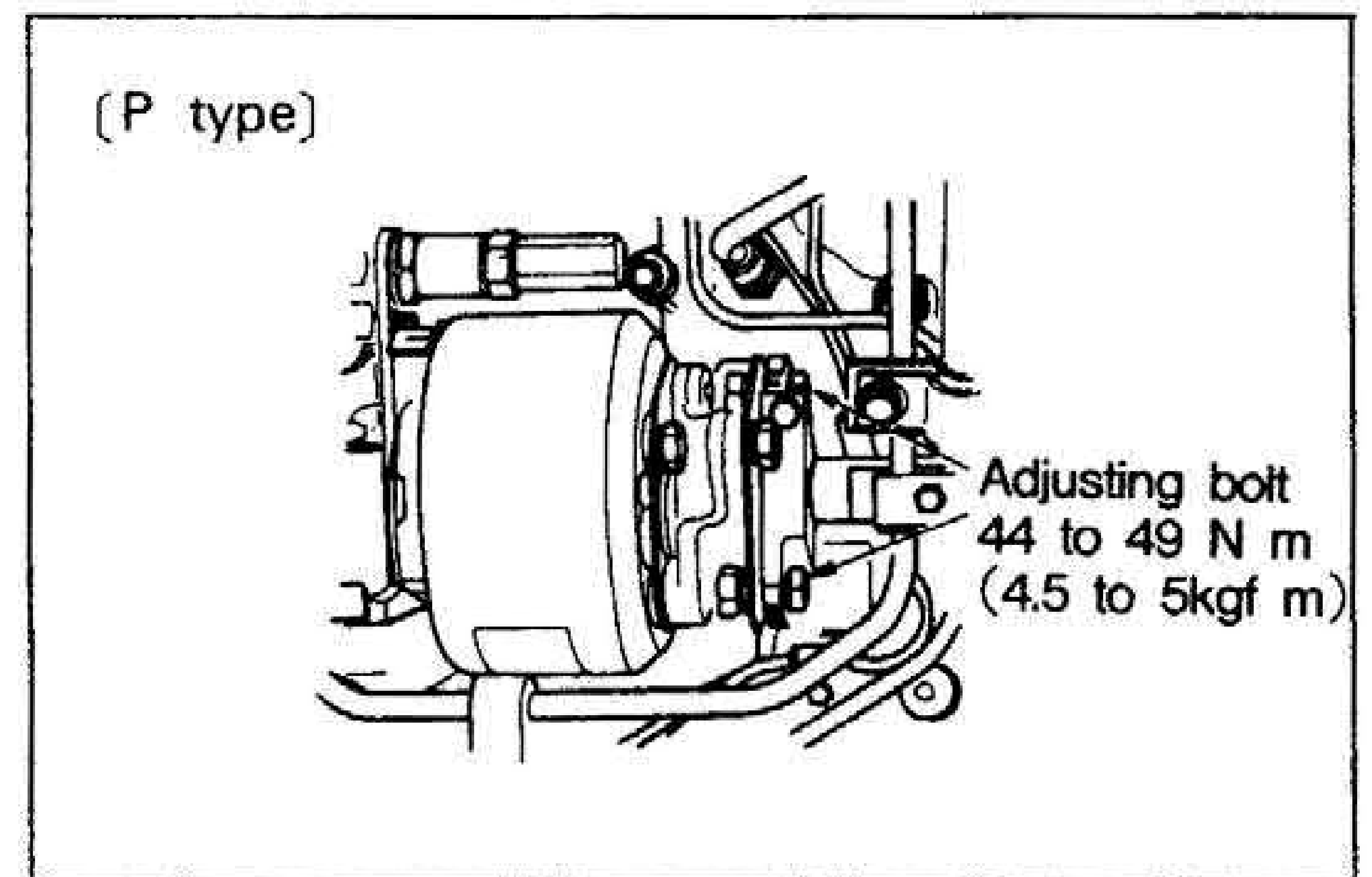
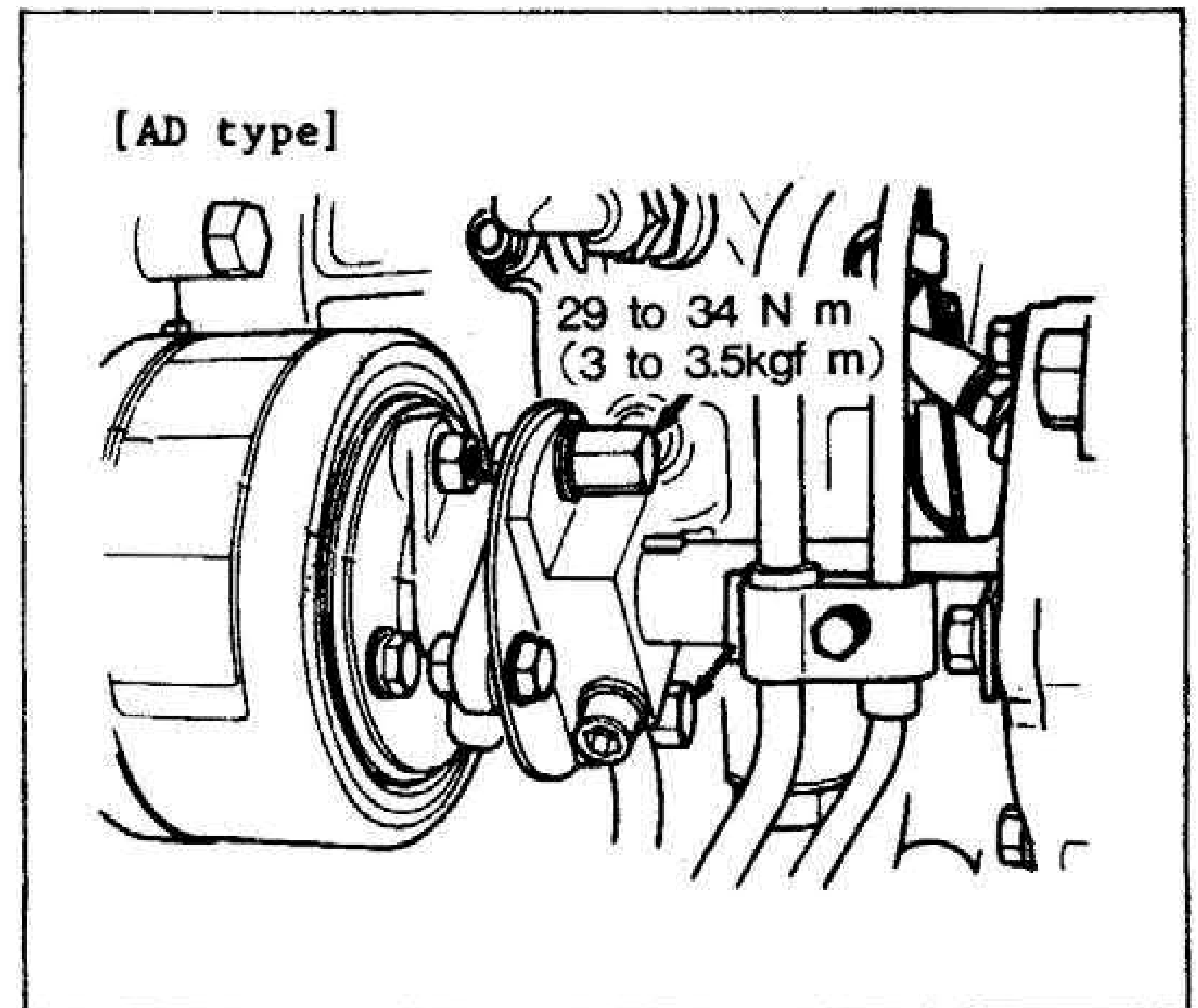
- (2) If, under the condition of Item (1), the pointer of the injection pump and the inscribed line of the automatic timer are in alignment, the injection start timing is correct.



- (3) If the fuel injection start timing is not correct, loosen the two timing adjusting bolts and adjust the timing by turning the automatic timer.

Tighten the adjusting bolts to the specified torque. Recheck the fuel injection start timing by the procedure described in Items(1) and (2).

NOTE : Do not loosen any other parts than the adjusting bolts.



5-1-4 Inspection and Adjustment of No-load Minimum and Maximum Speeds

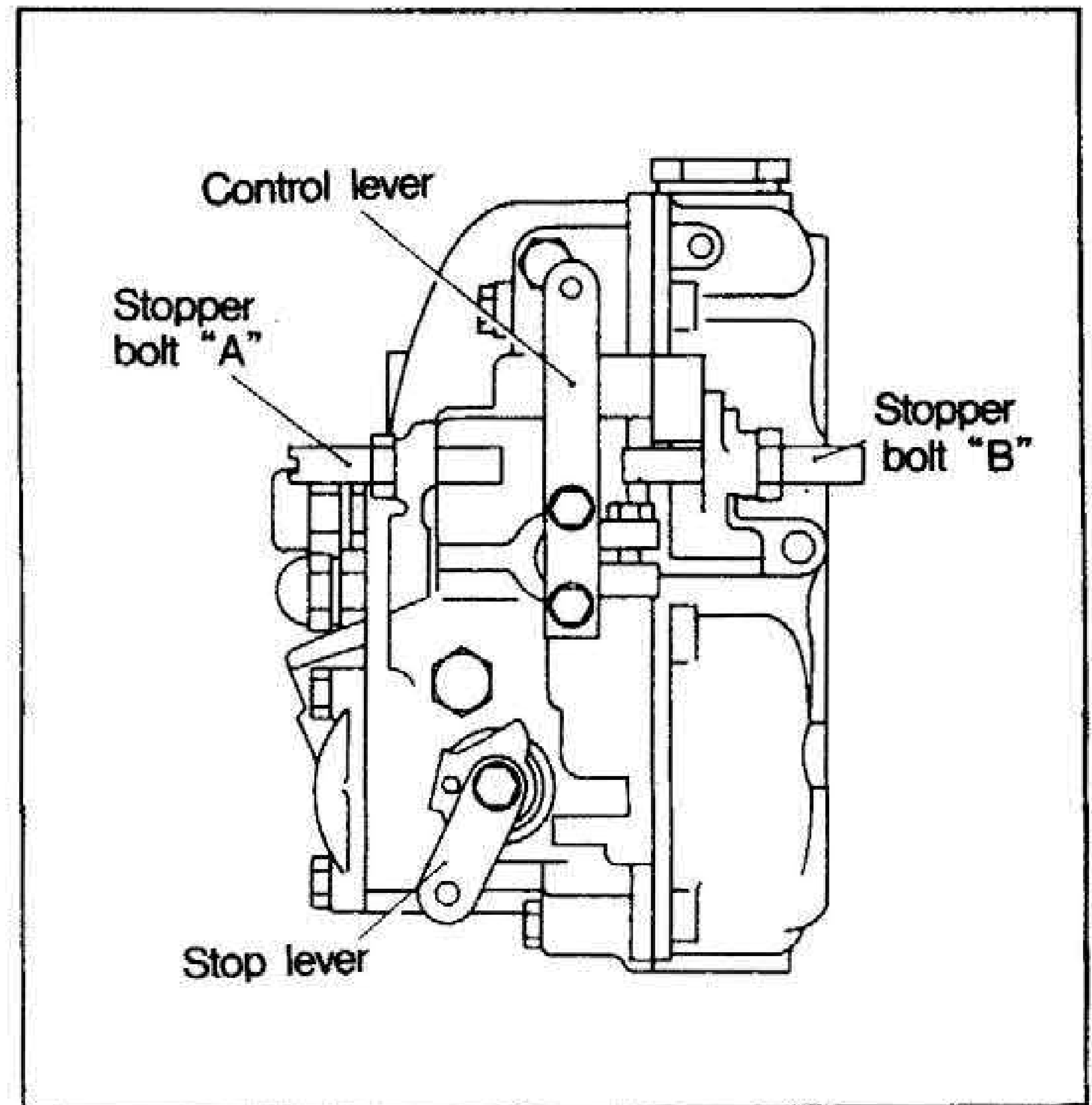
- (1) Inspection and Adjustment of Idling Run the engine at idle and check to ensure that the control lever touches the stopper bolt "A", and measure the engine speed at the time.

If the idling speed is not within the specified limits, adjust with the stopper bolt "A".

- (2) Inspection and Adjustment of No-load Maximum Speed

Push the control lever until it touches the stopper bolt "B". If the engine speed is out of the maximum speed limits, adjust with the stopper bolt "B".

NOTE : After idling adjustment, quickly move the control lever from the full load position to the idling position to verify that the engine does not stall and no hunting occurs. If abnormal condition occurs, make adjustment as far as the specified idling limits allow. If adjustment is impossible, disassemble and inspect the injection pump.



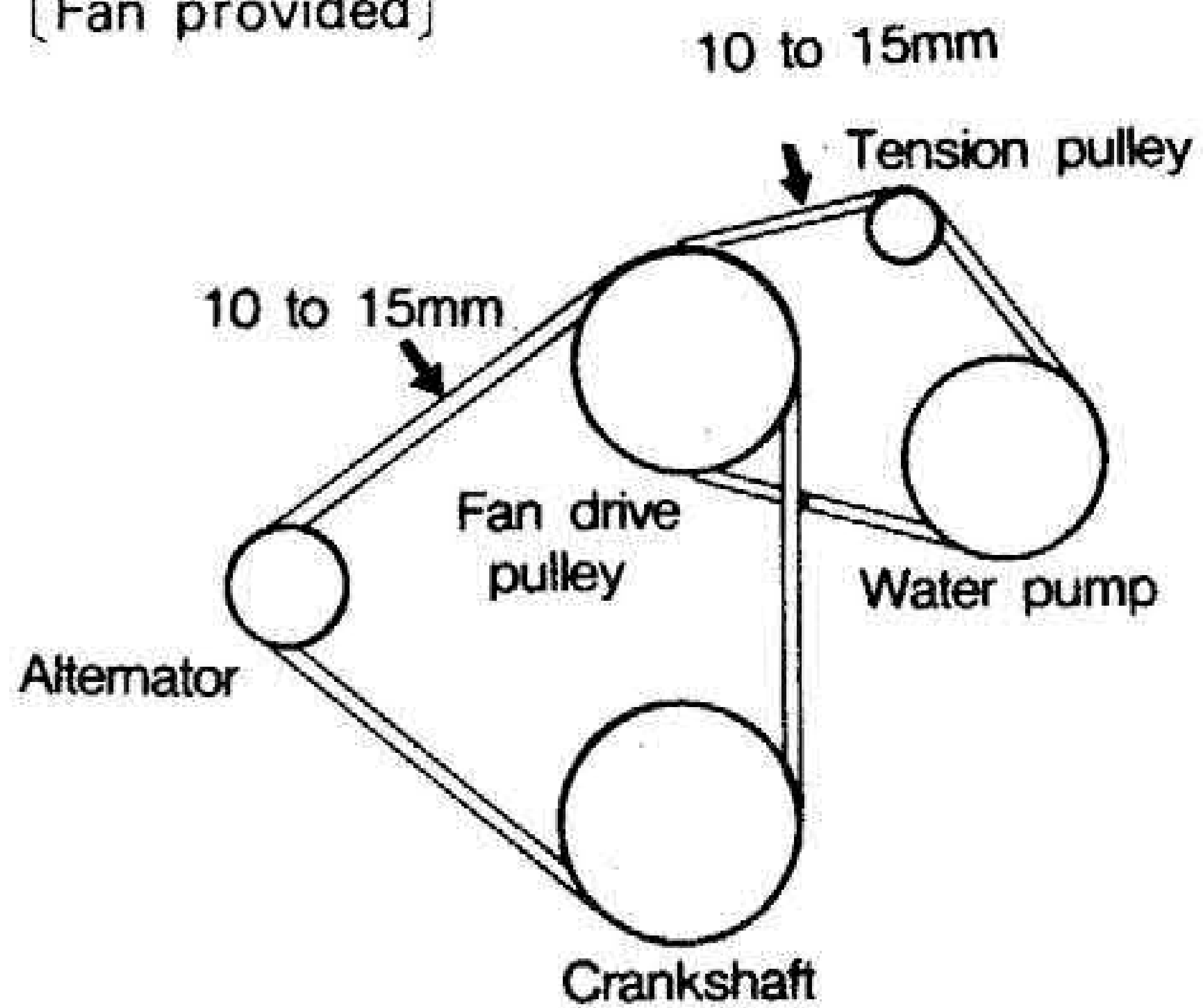
5-1-5 Inspection and Adjustment of V-belt Tension

- (1) Inspection

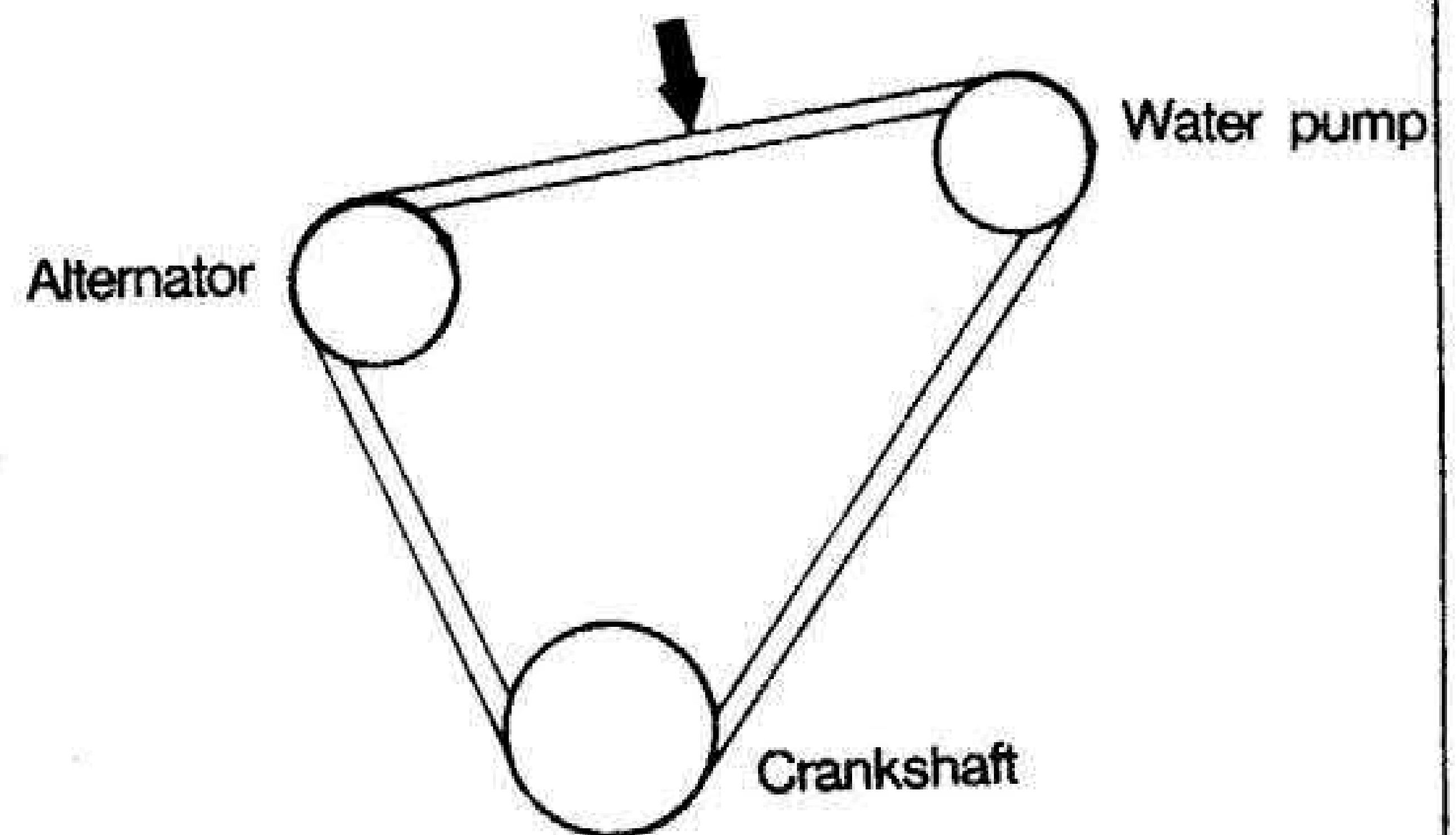
Adjust the belt tension so that when the middle of the belt is pressed strongly (approx. 98 N or approx. 10 kgf), the belt deflection will be up to specification.

Check the V-belt for damage. Make sure that a damaged and badly worn one is replaced.

[Fan provided]

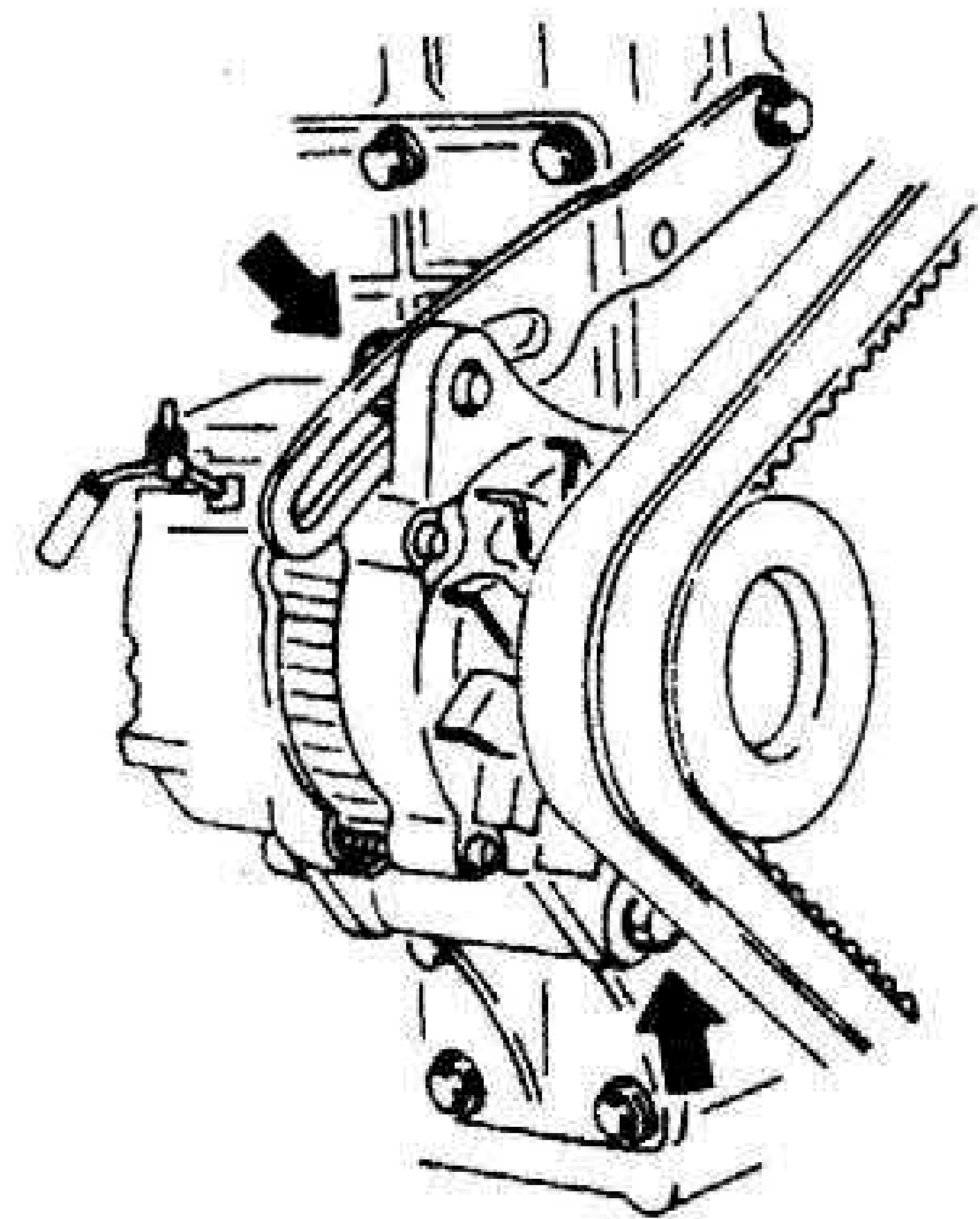


[No fan provided]



(2) Adjustment

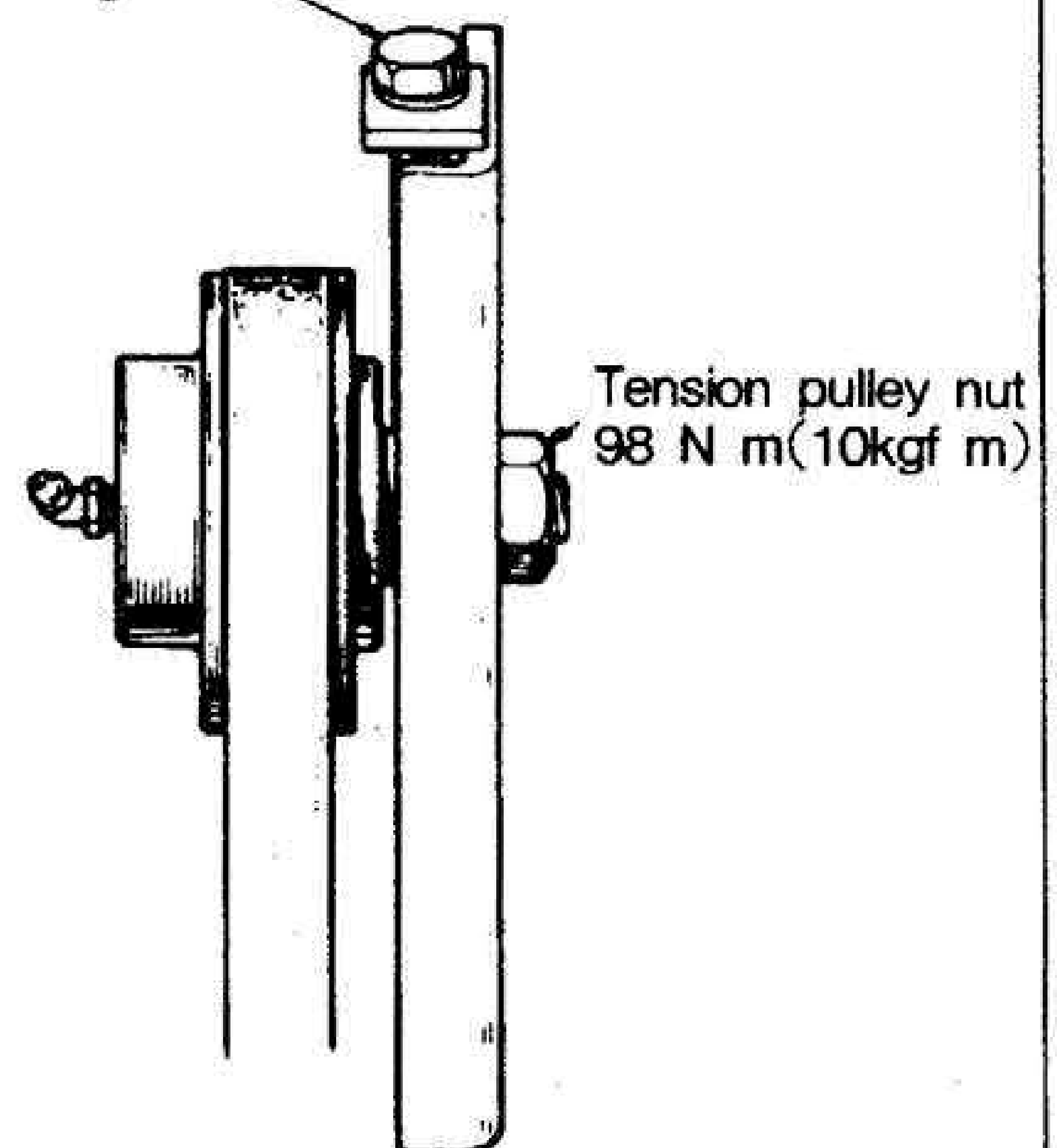
Slightly loosen the alternator mounting bolt and adjusting plate mounting bolt and move the alternator to right and left to adjust the tension.



Slightly loosen the tension pulley nut and turn the adjusting bolt to adjust the belt tension.

After adjustment, tighten the tension pulley nut to the specified torque.

Adjusting bolt



Tension pulley nut
98 N m (10kgf m)

5-2 BREAK-IN OPERATION

After an engine has been overhauled, install it to a dynamometer and break it in.

5-2-1 Starting of Engine

- (1) Before starting the engine, check the coolant, engine oil and fuel and bleed the fuel system.
- (2) Heat the air heater for approx. 40 seconds to facilitate engine starting.
- (3) Place the load control lever to the full load position and start the engine with the starter.
- (4) After the engine has started, return the load control lever to let the engine run at idle.

5-2-2 Inspection during Engine Operation

Pay attention to the following points during operation. If anything wrong was noted, stop the engine and take corrective action immediately.

1) Oil Pressure

When the oil temperature is over 70°C, the oil pressure should be 145 to 295 kPa(1.5 to 3.0 kgf/m²) during idling and 295 to 490 kPa(3.0 to 5.0kgf/m²) during high speed operation.

(2) Water Temperature

Should be approx. 75 to 85°C

(3) Check for oil leaks, water leaks and fuel leaks.

(4) Check for Noise

Knocking may be heard while the water temperature is low, but will die away as the water temperature rises.

(5) Check for abnormal exhaust color and odor.

5-2-3 Break-in Operation

The load, speed and time for break-in operation are as shown below.

Model	Break-in operation		
	Speed rpm	Output kW(PS)	Time in minutes
D6AU	650	0(0)	5
	1000	22(30)	15
	1400	48(65)	15
	1800	88(120)	15
D6AZ	650	0(0)	5
	1000	37(50)	15
	1400	66(90)	15
	1800	117(160)	15

5-2-4 Inspection and Adjustment after Break-in Operation

- (1) Check all bolts and nuts for looseness.
- (2) Retighten the cylinder head bolts.
- (3) After the cylinder head bolts have been retightened, adjust the valve clearance.
(Refer to 5-1-1.)