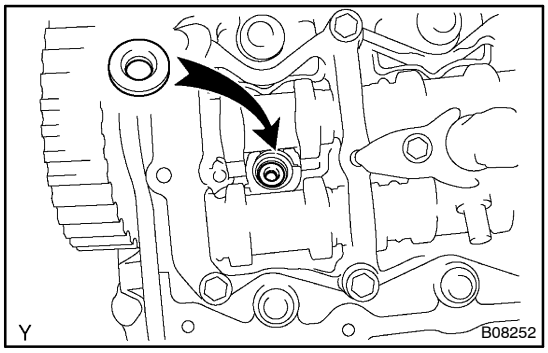
FU0AW–01

INSTALLATION

NOTICE:

- **When installing, clean up the seal surface of the injector, injection pipe, fuel inlet pipe, supply pump and common rail with clean light oil.**
- **In case of having the common rail and/or injectors replaced, must replace injection pipes, too.**
- **In case of having the supply pump and/or common rail replaced, must replace fuel inlet pipe, too.**



1. INSTALL INJECTORS

(a) Install 4 new nozzle seats to the cylinder head.
(b) Install a new back–up ring and O–ring to each injector.
(c) Apply a light coat of oil onto O–ring to each injector.
(d) Install the injector to cylinder head.

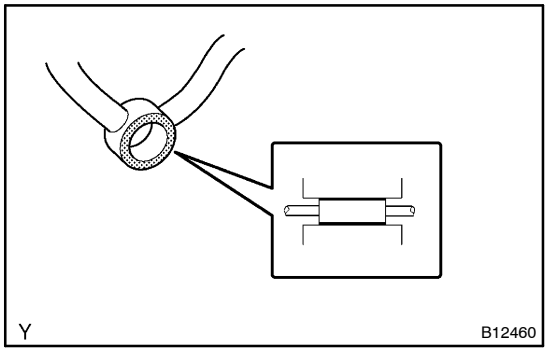
NOTICE:

- **At this time, insert the injector until it touches the nozzle sheet surface.**
- **When installing the injector to the cylinder head and in case that the injector comes to float up with the reaction of O–ring, pull out the injector once, install it again.**
- **During the time after equipping the head cover and before installing the injection pipe, install the irregular object prevention cover.**
- **Do not exchange the injector cylinder.**

(e) Temporarily install the 4 injection pipes.

HINT:

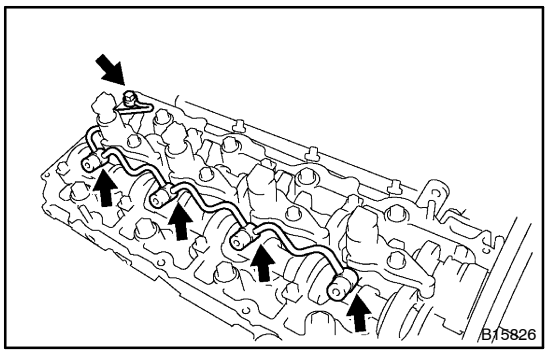
For positioning of the infector, temporarily injection pipe.



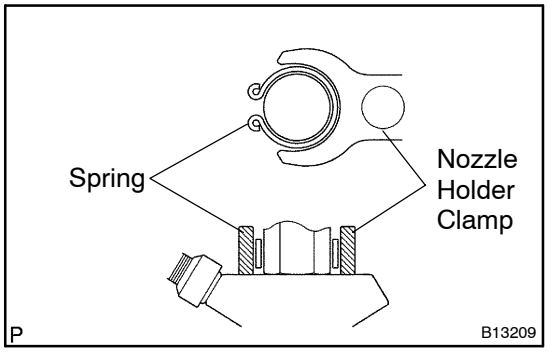
(f) Check before installing the nozzle leakage pipe using the straight edge that there is no scratch and deformation (dent) on the seal surface of the unions (at five positions).

In case of having any scratch of deformation, change it to a new one.

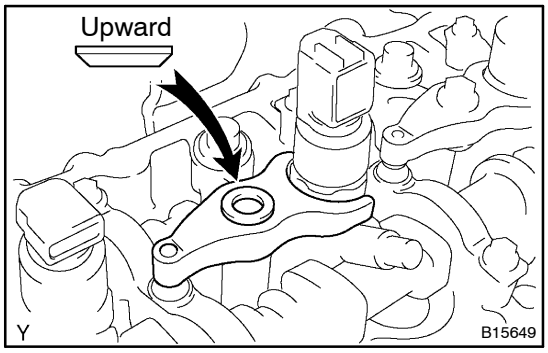
(g) Place the leakage pipe and 5 new gaskets.
(h) Apply a light coat of oil onto 4 hollow screws and union bolt.



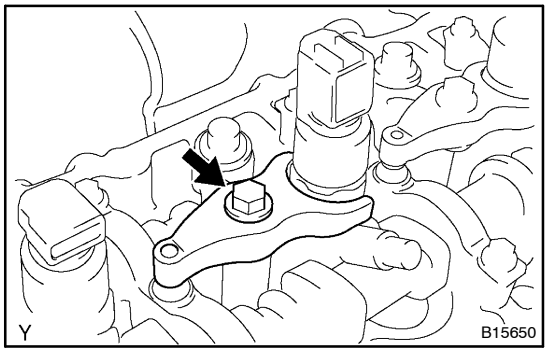
(i) Tighten the 4 hollow screws and union bolt by hand.



(j) Set the spring to each injector as shown in the illustration.



(k) Set the washer on the nozzle holder clamp as shown in the illustration.



(l) Tighten the bolt.

HINT:

Apply a light coat of engine oil on the threads and under the heads of the nozzle holder clamp bolts.

Torque: 21.6 N·m (220 kgf·cm, 16 ft·lbf)

NOTICE:

- **Clip the infector at the fork portion with a clamp which is set on the head of the cam cap bolt. At this time, check that the clamp does not hold the infector at the part where the spring is attached.**
- **To torque the clamp bolt, temporally torque it with hand until the bearing surface of the bolt touches the washer, then tighten by the specified torque.**
- **In case of tighten by the specified torque, pay attention not to tilt the bolt and the clamp.**

(m) Tighten the 4 hollow screws and union bolt.

Torque:

Hollow screw:

16 N·m (163 kgf·cm, 12 ft·lbf)

Union bolt:

12.5 N·m (128 kgf·cm, 9 ft·lbf)

NOTICE:

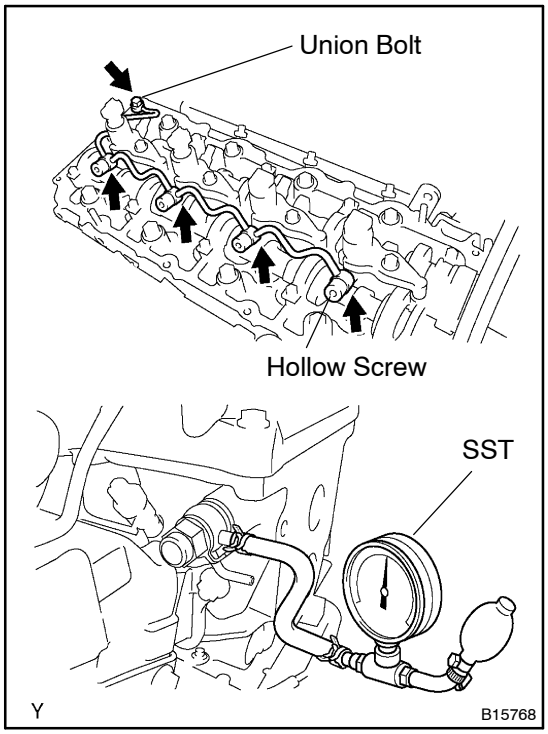
In case of over–torque, the nozzle leakage pipe can not be reused, so change it to new one.

(n) Remove the 4 injection pipes.

(o) Check that there are no leaks from nozzle leakage pipe connection.

(1) Remove the 2 bolts, union bolt, check valve, No. 2 nozzle leakage pipe and 2 gaskets.

(2) Purchase new check valve.
Part No. 23122–27010
(3) Install the No.2 nozzle leakage pipe and gasket with the check valve to the cylinder head.
Part No. 23762–27010 (No. 2 nozzle leakage pipe)
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)
(4) Apply a light coat of soapy water (any fluid to detect fuel leakage) on the nozzle leakage pipe connection.



(5) Using SST (turbocharger pressure gauge), apply the SST to the fuel return side of the No.2 nozzle leakage pipe, and maintain 100 kPa (1.0 kgf/cm^2, 14.5 psi) of pressure for 60 seconds to check that there are no bubbles from applying the soapy water place.

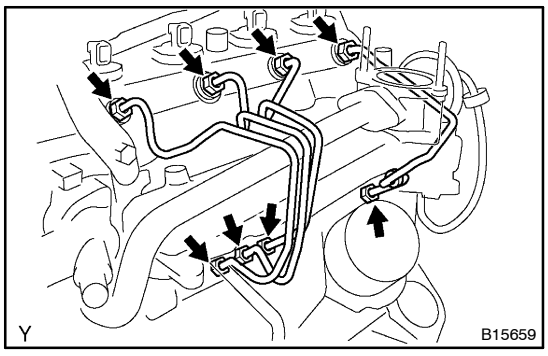
NOTICE:
When checking the leakage, be sure to remove the ball and spring in the check valve before operating.

SST 09992–00242

(6) After checking fuel leaks, wipe off soapy water from nozzle leakage pipe connection.
(7) Remove SST, check valve, No.2 nozzle leakage pipe and gasket.
(8) Temporarily install the No. 2 nozzle leakage pipe and 2 new gaskets with the 2 bolts, union bolt and check valve.

HINT:
Never reinstall the disassembled check valve on the engine.

2. INSTALL CYLINDER HEAD COVER (See page EM–18)



3. INSTALL INJECTION PIPE

(a) Temporarily install the 4 injection pipes.
(b) Install the injection pipe No. 4 clamp with the bolt.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

NOTICE:
- **Make sure that the rubber is fit inside the clamp.**
- **When installing, properly position the rubber and clamp.**

(c) Install the injection pipe clamp No. 2 with the bolt.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

(d) Install the injection pipe clamp No. 3 with the 2 bolts.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

(e) Using SST, tighten the injection pipe union of common rail side.
SST 09023–12900
Torque:
35 N·m (357 kgf·cm, 26 ft·lbf)

HINT:
Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

(f) Using SST, tighten the injection pipe union of injector side.
SST 09023–12700
Torque:
35 N·m (357 kgf·cm, 26 ft·lbf)

HINT:
Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

(g) Tighten the 2 bolts, union bolt and check valve for No. 2 nozzle leakage pipe.
Torque:
Bolt: 12.7 N·m (130 kgf·cm, 9 ft·lbf)
Union bolt: 12.7 N·m (130 kgf·cm, 9 ft·lbf)
Check valve: 21 N·m (214 kgf·cm, 15 ft·lbf)

4. INSTALL DIESEL THROTTLE BODY
(See page ED–7)

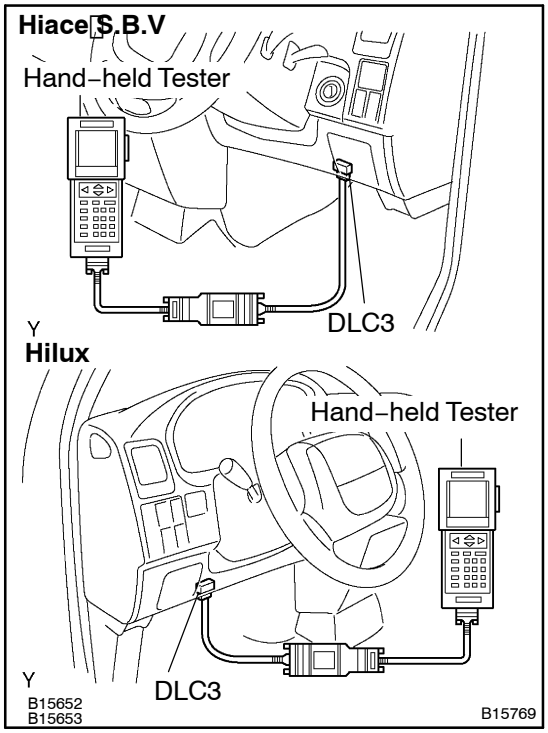
5. INSTALL VSV ASSEMBLY

6. CONNECT ENGINE WIRE

NOTICE:
When installing a wire for infector No. 1 and No. 2, check the at the number of the wire agrees with that of the injector.

7. BLEED INJECTION PIPE

Move the priming pump of the fuel filter up and down unfill it becomes hard.



8. CHECK FUEL LEAK

CAUTION:

- **During ACTIVE TEST mode, engine speed goes high and combustion noise becomes loud, so pay attention.**
- **During ACTIVE TEST mode, fuel becomes high–pressured, so take much care for not expose your eyes, hands, or body to the escaped fuel.**

(a) Check that there are no leaks from any part of the fuel system at the engine stops.

If there is fuel leakage, replace these parts.

(b) While cranking or start the engine, check that there are no leaks from any part of the fuel system.

If there is fuel leakage, replace these parts.

(c) Disconnect the return hose from the common rail.

(d) While cranking the engine, check fuel leaks from the return pipe.

If there is fuel leakage, replace the common rail assembly. (See page FU–21)

(e) Connect the hand–held tester to the DLC3.

(f) Start the engine and push the hand–held tester main switch ON.

(g) Select the FUEL LEAK test of ACTIVE TEST mode on the hand–held tester.

(h) If you have no hand–held tester, depress the accelerator pedal quickly and fully to increase the engine speed at maximum and keep it for 2 seconds. Repeat this operation several times.

(i) Check that there are no leaks from any part of the fuel system.

NOTICE:

However, if the leakage from the return pipe is less than 10 cc (0.6 cu in.) in a minute, it is acceptable.

If there is fuel leakage, replace these parts.

(j) Reconnect the return hose to the common rail.