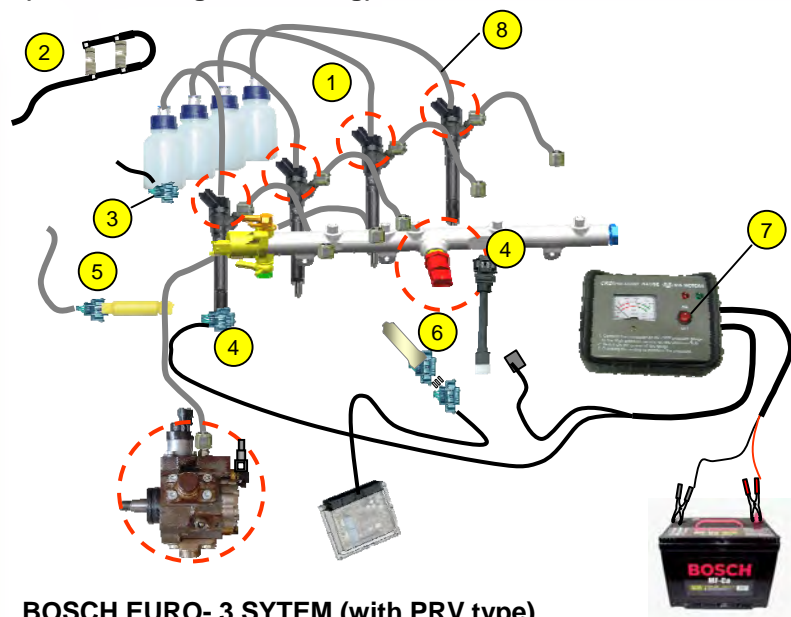**STEP 1-1**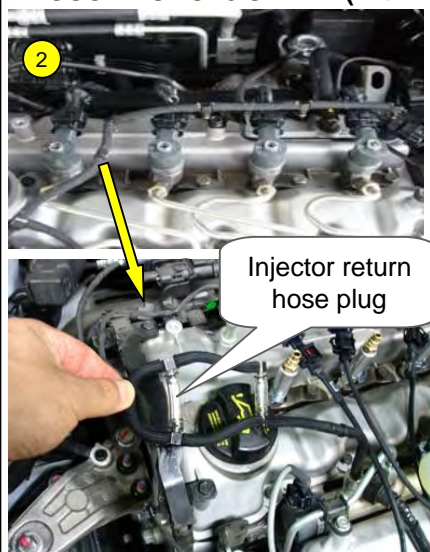   Conduct this test when the engine is not able to start, otherwise(if possible to start) skip this test and conduct "STEP 1-2 DYNAMIC TEST" instead.

Nextech

INJECTOR BACK LEAK TEST WITH STATIC
(Test with engine cranking)

BOSCH EURO- 3 SYTEM (with PRV type)

Injector return hose plug

Purpose of this test is to measure the amount of injector back leak and to check the performance of High pressure pump.

* If injector back leak amount is too much High pressure pump's performance test will not be performed correctly. proceed Step 3-1 thru step 3-2 in this case.

TEST PROCEDURE

1) Install the Back Leak tube① and the flask to injectors.
2) Block the fuel return hose② with plug.
3) Remove the wiring connectors from all Injectors and PRV.
4) Install the high pressure gauge.
5) Install the PRV dummy resistor to the connector of PRV control wire.
6) Install the HP sensor dummy resistor to the connector of HP sensor control wire.
   Purpose of Dummy resister is to prevent fail safe mode by ECU.
7) Turn on the power supply switch⑦ of the high pressure gauge.
8) Crank the engine a few seconds to build high pressure and to do air bleeding.
   Crank the engine again and measure the maximum high pressure of the pump
9) To prepare measuring back leak amount, empty visible tubes
   removing the injector return hose adapter from injector.
10) Crank the engine once for 5 to 6 seconds and measure the back leak
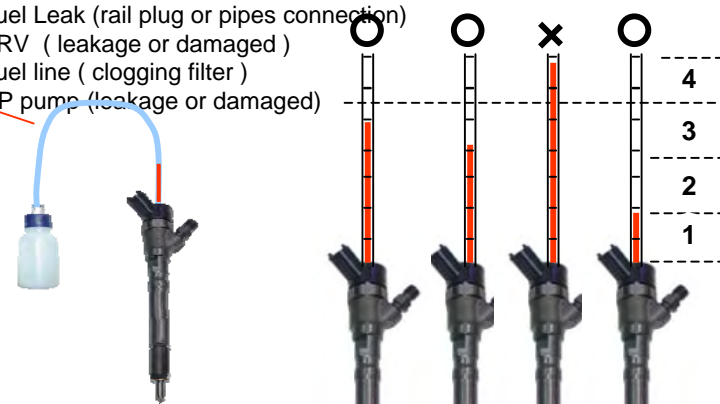   amount from each visible tube.

  SERVICE SPEC
  High pressure : Above 700 bar (with normal Back Leak condition)
  ※ Too much back leak amount leads rail pressure down and cause
     insufficient high pressure.
  Back Leak : Less than 3.5 times than minimum amount injector

CHECK POINT (if test was failed)
- Fuel Leak (rail plug or pipes connection)
- PRV (leakage or damaged)
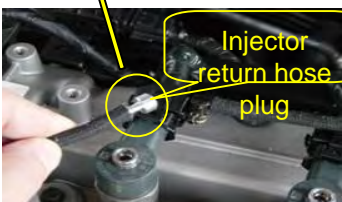- Fuel line (clogging filter)
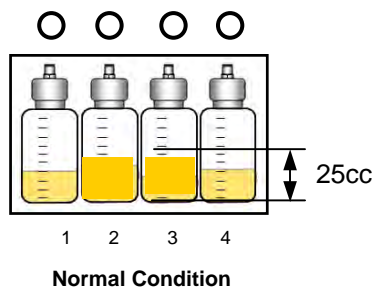- HP pump (leakage or damaged)

STEP 1-2 Conduct this test when the engine is able to start, otherwise(if unable to start) skip this test and conduct "STEP 1-1 STATIC TEST" instead.

Nextech

INJECTOR BACK LEAK TEST WITH DYNAMIC
(Test with engine running)

Injector return hose plug

○ ○ ○ ○

25cc

1 2 3 4

Normal Condition

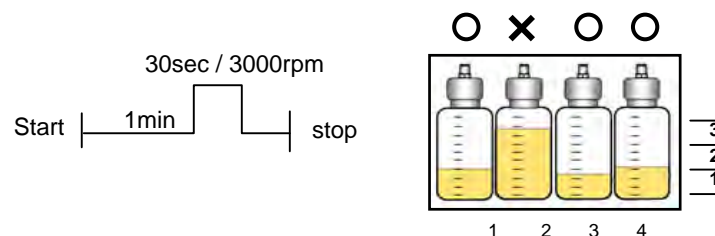**Purpose of this test is to measure the amount of injector back leak.**

TEST PROCEDURE

1) Remove the fuel return hose from each injector
2) Install injector back leak test kit to the Injectors
3) Conduct the BACK LEAK test referring to following explanation.

BOSCH system
① Start engine → 1minute at idle → up to 3000rpm for 30sec → Stop
② Measure the amount of fuel in each test bottle

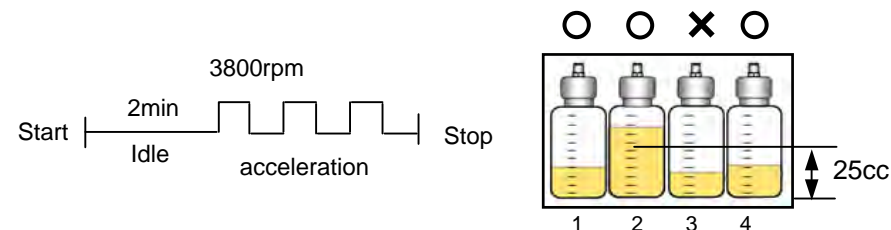SERVICE SPEC : Less than 3.5 times than minimum amount injector

○ ✕ ○ ○

30sec / 3000rpm

Start └─ 1min ─┘ stop

3
2
1

1 2 3 4

DELPHI SYSTEM (HP 2.9)
①Connect the Hi-Scan and select the 'High Pressure Leak Test' mode.
②Conduct the 'High Pressure Leak Test' until the Hi-Scan finish the test automatically.
  or manually :
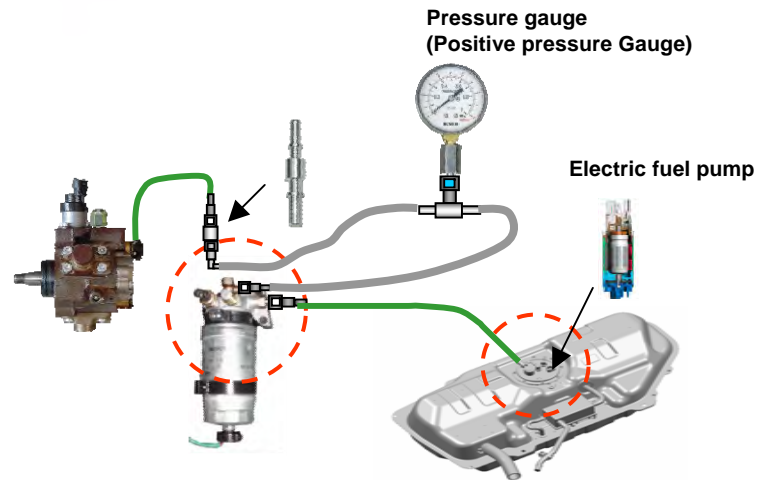Start engine→ 2minutes at idle → 3 times acceleration → Stop engine

SERVICE SPEC : Less than 25cc

○ ○ ✕ ○

3800rpm

Start ├─ 2min ─┤ Stop
        Idle   acceleration

25cc

1 2 3 4

ELECTRIC PUMP TYPE

Purpose of this test is to check the condition of the fuel line, blockage, performance of the feed pump, etc.

Pressure gauge
(Positive pressure Gauge)

Electric fuel pump

NOTE
- Only for Electric fuel pump type vehicles
EURO Ⅳ : 2 ~ 4.5 bar
OTHERS : 1.5 ~ 3 bar

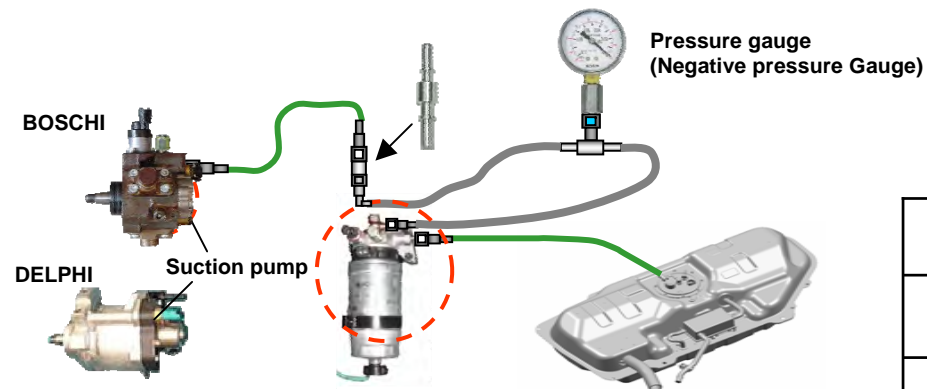| Diagnostic factor	Symptoms
Fuel filter	• Immediate engine stall after initial starting • Lack of engine power
Pump	Hard to start / Engine stall

SUCTION PUMP TYPE

NOTE
- Only for the Suction pump type Vehicles
SERVICE SPEC : 8 ~ 25 cm Hg

Pressure gauge
(Negative pressure Gauge)

BOSCHI

DELPHI

Suction pump

Diagnostic factor	Symptoms
Fuel filter	• Immediate engine stall after initial starting • Lack of engine power
Pump	Hard to start / Engine stall

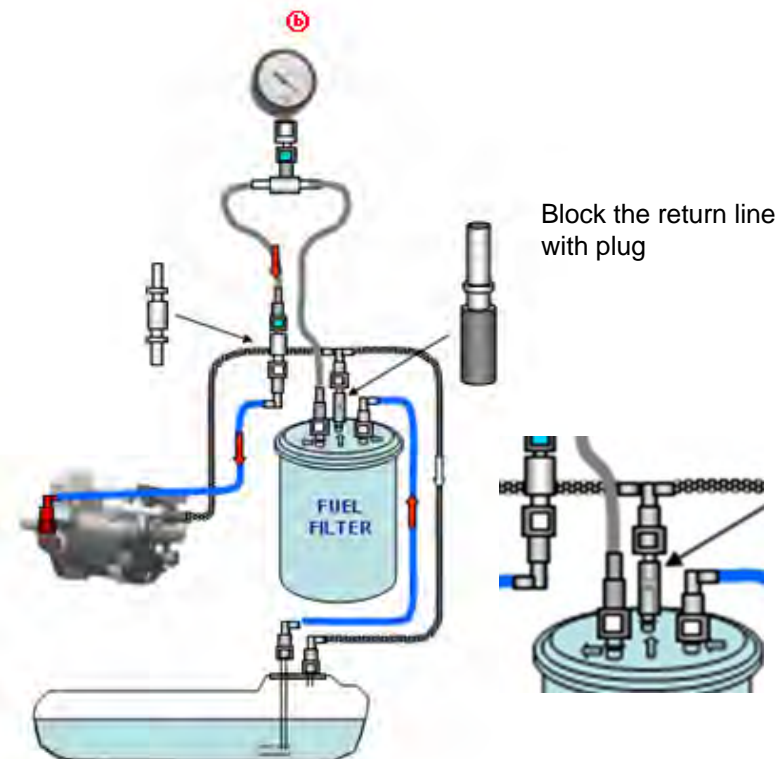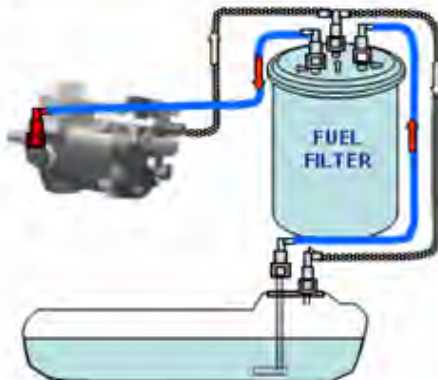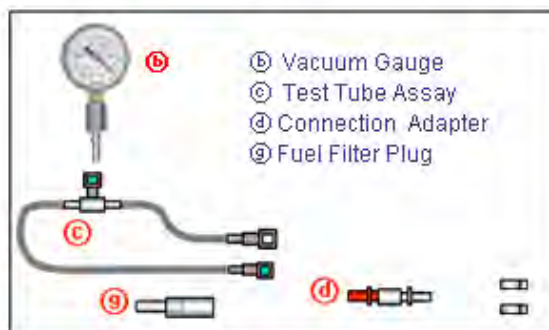**INTERNAL SUCTION PUMP TYPE (DELPHI)**

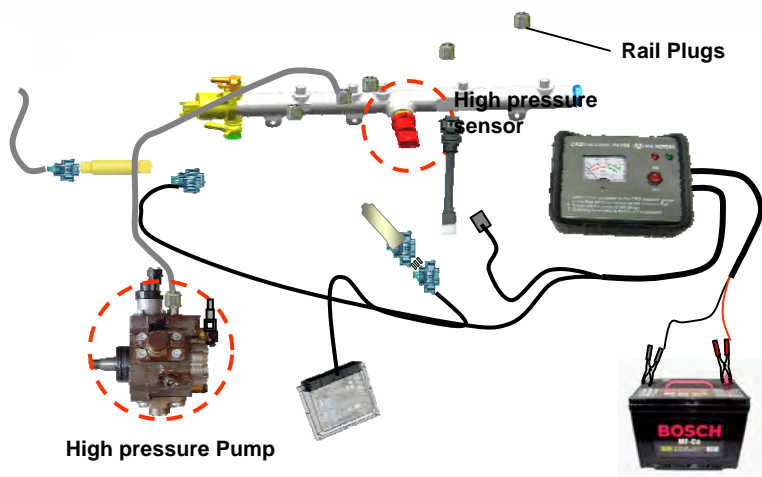**Purpose of this test is to check the condition of the fuel line, blockage, performance of the feed pump, etc.**

VACUUM	JUDGMENT
8~19 cmHg	System normal
20~60 cmHg	Filter or line clogging (pump OK)
0~7 cmHg	Air leak in to the system or Pump problem

Internal suction pump type (Delphi)

ⓑ Vacuum Gauge
ⓒ Test Tube Assay
ⓓ Connection Adapter
ⓖ Fuel Filter Plug

Block the return line with plug

HIGH PRESSURE TEST WITHOUT INJECTOR

Rail Plugs

High pressure sensor

High pressure Pump

BOSCH EURO- 3 SYTEM (with PRV type)

Purpose of this test is to confirm the High pressure pump performance and to reconfirm high pressure pump performance when high pressure value is lower than 700bar measured during Step 1-1.
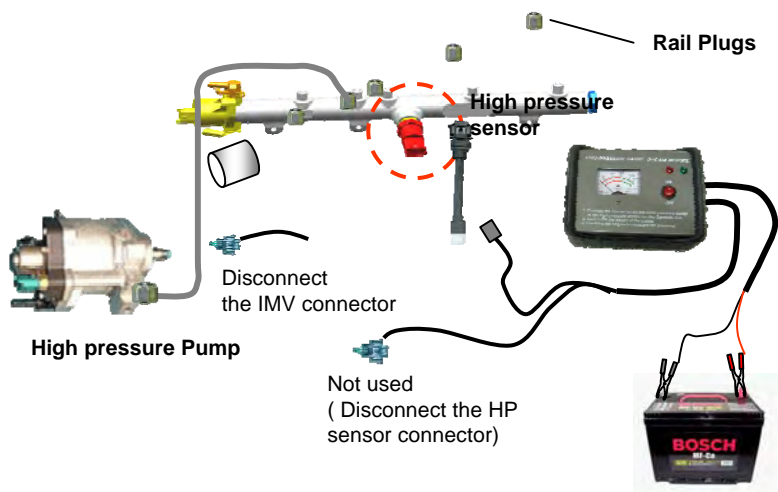**Avoiding injector back leak completely by blocking the rail outlet you can find out whether the lack of pressure was really caused by high pressure pump faulty.**

TEST PROCEDURE
- Remove the Injector pipes from the rail
- Install the dummy resistors(for PRV & HPS) to the connector of it's control wire.
- Block the rail outlet using RAIL PLUG (4 ea)
- Install the high pressure gauge
- Select mode switch of the gauge to Max High position
- Crank the engine to check the maximum High pressure
- If the pressure is over 1400bar stop cranking immediately to avoid damage of High pressure pump due to overload.

 SERVICE SPEC : Above 900 bar
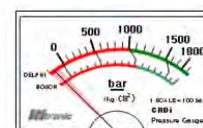 If measured pressure is above 900bar,the high pressure is normal.

Rail Plugs

High pressure sensor

High pressure Pump

Disconnect the IMV connector

Not used
(Disconnect the HP sensor connector)

DELPHI or EURO- 2 SYTEM (without PRV type)
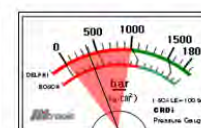
TEST PROCEDURE
 - Remove the Injector pipes from the rail
 - Removed the wiring connector of Inlet Metering Valve (IMV)
 - Block the rail outlet using RAIL PLUG
 - Install the high pressure gauge
 - Selector mode switch of the gauge to Max High position
 - Crank the engine to check the maximum High pressure
 - If the pressure is over 1400bar stop cranking to avoid damage of High pressure pump due to overload.

 SERVICE SPEC : Above 1000 bar
 If measured pressure is above 1000bar,the high pressure is normal.
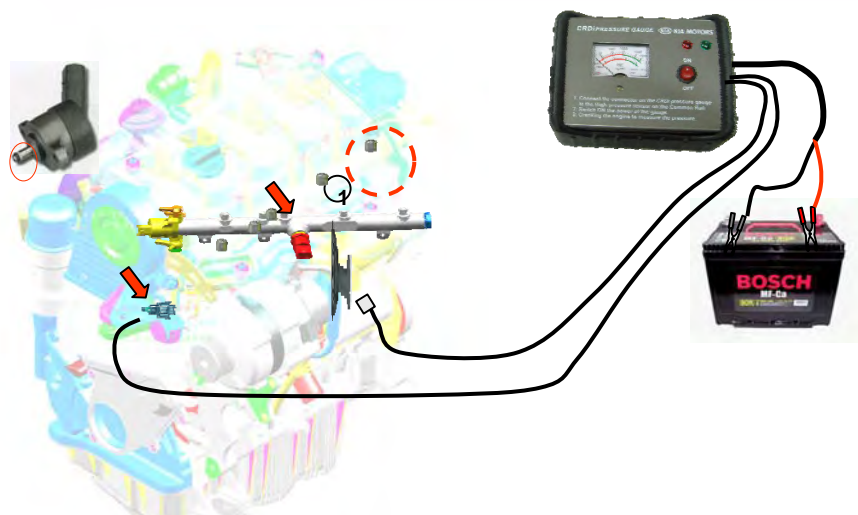
| Sensor problem | Low pressure | Normal |

PRESSURE REGULATOR VALVE DIAGNOSIS

When assemble fuel pipe after test
1) Before connecting the fuel pipes to the engine, be sure that all the pipe outlet surfaces, inner passages, and especially fuel pipe fitting nuts are clean. Clean using air gun if necessary.
2) Assemble all fuel pipes except the fuel pipe fitting nuts of injector side.
3) Temporarily tighten the fuel pipe fitting nuts to injectors by hand .
4) To prevent contamination on engine room, wrap up around the injector pipes using paper towel or shop rag as shown.
5) Crank the engine 2 - 3 times for 5 - 6 seconds to remove dusts from injector connection area.
6) Tighten the nuts with specified torque using torque wrench.
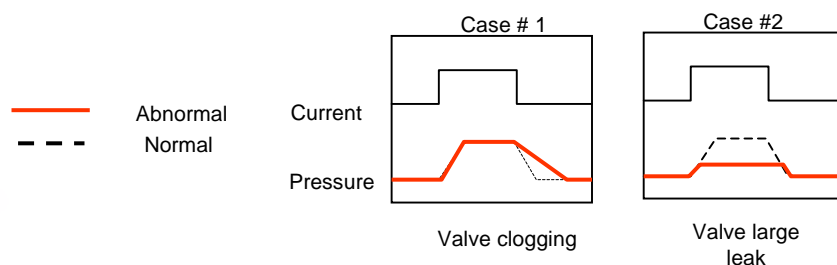7) Erase the DTC code by scan tool.

Using HIGH PRESSURE GAUGE you can build or reduce rail pressure.

TEST PROCEDURE

1) Install the High Pressure controller & Tester
2) Select the MODE switch to HIGH mode
3) Crank the engine to build the high pressure
4) Turn on the power switch to create rail pressure and turn off the switch to decay the pressure. Watch the response of needle of gauge during the power switch is on and off .
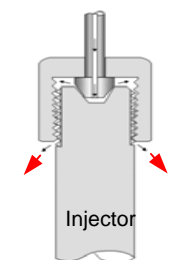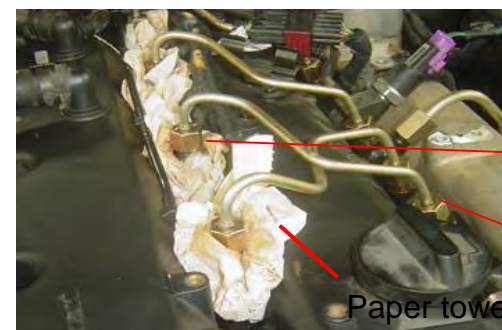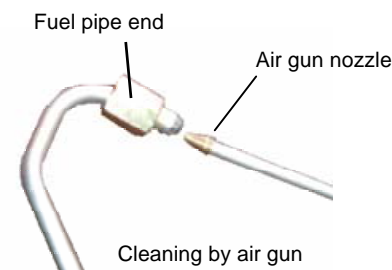
Case 1 : Pressure drop delayed = Valve screen may clogged
Case 2 : Pressure was not increased or delayed = Valve leakage

Fuel pipe end
Air gun nozzle
Cleaning by air gun
Injector
Loosen the nuts
Tighten the nuts
Paper towel

—— Abnormal
– – – Normal
Current
Pressure
Case # 1
Case #2
Valve clogging
Valve large leak

This new Injector Tester NCT- 2000 is developed in addition to CNCT-1000, in order to improve diagnostic efficiency and accuracy for vehicles equipped with Common Rail System.

CIT-2000 enables Injection Quantity Comparison Test under Low and High fuel pressure conditions, which it was not possible with Hi-scan or NCT-1000.
Also Cylinder compression and Rail pressure regulator test are additionally available.

Above all, most benefit is that you can show the real condition of Injector to customers.

Tool supplier : Nextech Co., Ltd.
Contact Point : Mr. Alex Lim
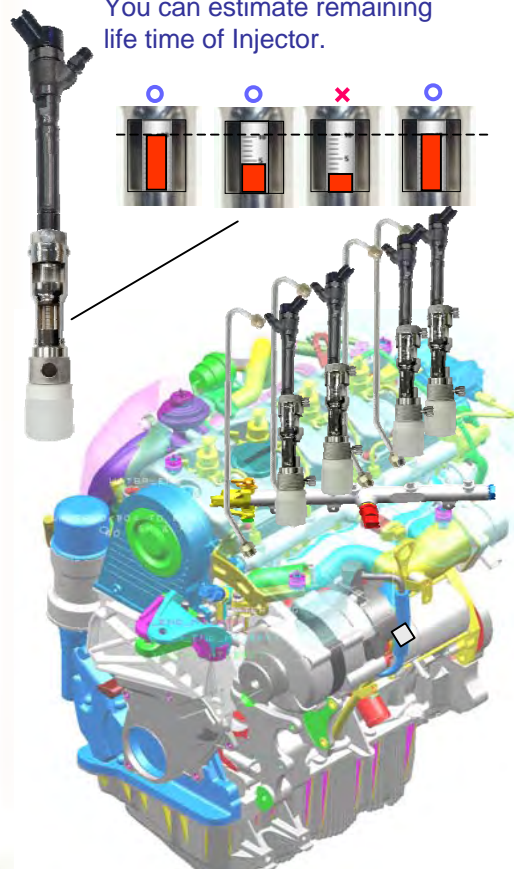Tel : +82-2-3140-1489 or 1443
Fax : +82-2-3140-1449
E-mail : sales@nex-tek.com

1. INJECTOR TEST

Injection quantity Comparison Test
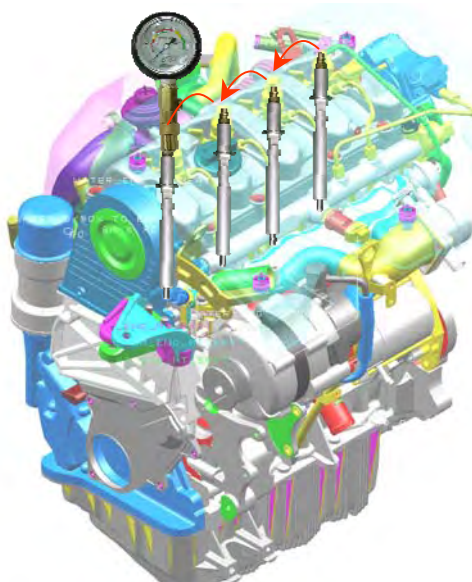You can estimate remaining life time of Injector.

2. COMPRESSION TEST

Cylinder Compression Comparison Test

Dummy injectors with multiple adapter to cope with variable injector type and quick coupling for gauge

3. PRV ACTUATION TEST

Pressure Regulator Valve Actuation Test,

PRV

8