




In this issue:

In this 3rd news bulletin we bring you an overview of replacing a DENSO Diesel Common Rail Fuel Pump, as useful background information to our latest film on  [click here](#).

Following the introduction of the new DENSO-C diagnostic tool in our December newsletter, we will be issuing some additional technical news bulletins in the coming weeks to provide further technical insight into DENSO Diesel systems – and the need for, and use of, diagnostics.

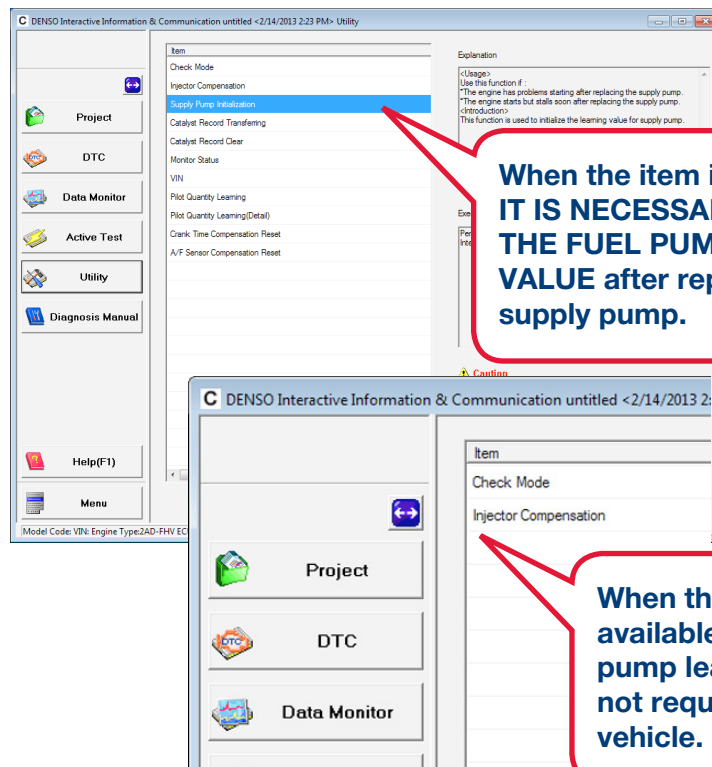
Replacing a Diesel Common Rail Fuel Pump:

When replacing a fuel supply pump, it is necessary to consult with a genuine OEM - or DENSO diagnostic tool, to find out if IT IS NECESSARY TO RESET THE FUEL PUMP LEARNING VALUE.

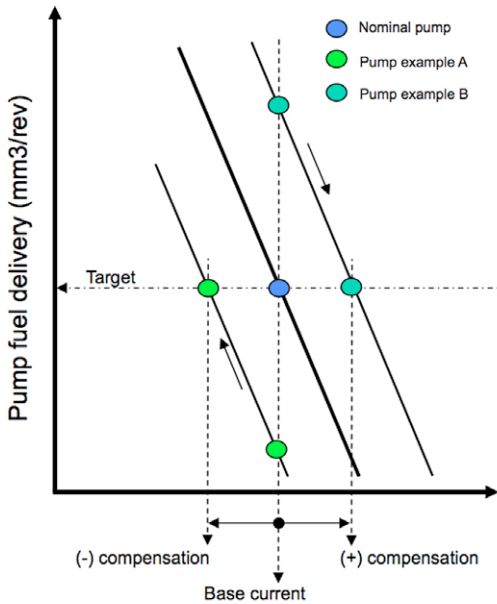
Supply Pump Learning:

The electronic control unit (ECU) learns the electrical current that is required by the Suction Control Valve, on the fuel supply pump, to achieve the common rail pressure that is needed to fire-up the engine.

When the current is too low, this results in a low rail pressure, preventing the fire-up of the engine. Each pump requires a different current, which is dependent on many factors, including production tolerances and ageing.



The image shows two screenshots of the DENSO diagnostic tool interface. The top screenshot shows a list of diagnostic items with 'Supply Pump Initialization' highlighted. A red callout box points to this item with the text: **When the item is available; IT IS NECESSARY TO RESET THE FUEL PUMP LEARNING VALUE after replacing a fuel supply pump.** The bottom screenshot shows the 'Injector Compensation' option selected, with a red callout box pointing to it and the text: **When the item is NOT available; fuel supply pump learning reset is not required for that vehicle.**



Risks – When supply pump learning does not take place:

- Rail pressure offset (too low or too high)
- Engine cranks but does not start (too low)
- Rail pressure limiter opening (too high)
- DTC (Diagnostic Trouble Code)
- MIL (Check Engine Lamp) on



HP3 Supply Pump Replacement Key Points:

Remove

1. Ensure there is no pressure in the system before opening the high pressure pipes.
2. Ensure the area around unions is clear from any dirt or liquids.
3. Use blanking caps on open ports to prevent dirt / dust entering the components.
4. Ensure care is taken not to damage the pump / SCV & temperature sensor connector when removing from engine.
5. Do not use the connection pipe as a handle – this prevents the risk of leakage from pipe joints

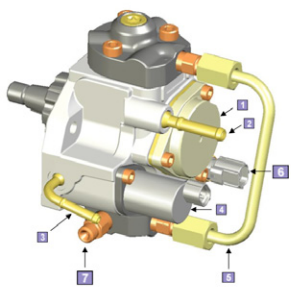
Reinstallation

1. Ensure that the timing is correct after drive gear and timing belt installation (refer to the OEM information or DENSO diagnostic tool).
2. Ensure drive nut is tightened to correct torque (refer to the OEM information or DENSO diagnostic tool).
3. Remove blanking caps at last operation before re-fitting the high pressure, fuel inlet and outlet pipe.
4. Bleed air out of the system.
5. Carry out pump learning service routine by using the diagnostic tool.
6. Perform the high pressure test using the diagnostic tool to confirm there is no leakage!

IMPORTANT: When performing a high pressure test with the engine running, never touch any high pressure pipe, connection or component with your fingers. Leakage of hot, high pressurised fuel might cause serious injuries!

Did you know...?

- Fuel inlet [2] and fuel outlet [3] pipe have different diameters to prevent tubing mistakes.
- Do not use the connection pipe as handle to carry it! (to prevent leakage from pipe joints)



- 1 Feed pump
- 2 Fuel inlet Ø 8mm
- 3 Fuel outlet ø 6,35mm
- 4 SCV (Suction Control Valve)
- 5 Cylinder element connection pipe
- 6 Fuel temperature sensor
- 7 High pressure connection

In the next issue:

In the next news bulletin we will look in depth at further DENSO Diesel-specific system factors you need to be aware of whilst working on, and diagnosing, a DENSO Diesel common rail system.

Aspects that will be reviewed are:

- Injector compensation
- Small injection quantity learning
- And more....
- And more....

Go online!

Over the coming weeks we will upload new videos on the DENSO Diagnostic YouTube channel to support these news bulletins. Why not take a look? To check out our films and subscribe to our  channel, [click here](#). **Thank you for watching!**

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