



KaizenFab HP4 Injector Pump Install instructions

Installing the Hp4 kit with the engine in the car is entirely possible, however if you are rebuilding the motor it is recommended that the process is done with the timing case off the motor drilling and tapping the holes with a drill press.

Tools Required for in car installation:

- Spanners, Sockets and Allen keys
- Right angle drill head (PN Or Similar)
- Hand Held Drill
- 7mm Drill
- M8 x 1.25 Tap
- Red Loctite
- Automotive Oil Resistant Silicone
- Center Punch
- Hammer
- Aviation Gasket Sealer
- Solder
- Soldering Iron
- 13mm Heat Shrink

Kaizen Fab recommends all work is performed by a qualified mechanic, components incorrectly installed will not be covered under warranty. Kaizen Fab recognises that these instructions do not cover every small detail of the process, nor do they take the fastest route to completing the job, however we suggest for the best results to follow the noted detail.



Step 1:

Disconnect the battery, remove battery from engine compartment.

Step 2:

Drain Coolant and remove the following in order:

Fanbelt

Overflow bottle

Thermo Fan / Fan shroud

Radiator

Alternator and Fan belt tensioner

Crank Angle Sensor (Unplug and remove)

Step 3:

Remove the timing belt cover and align the motor to TDC using the marks present on the fuel pump and cam (check both)

With the belt still on use an impact gun to loosen the cam gear bolt.

Continue to remove

Harmonic Balancer

Cam belt tensioner

Cam timing belt

Cam timing belt idler

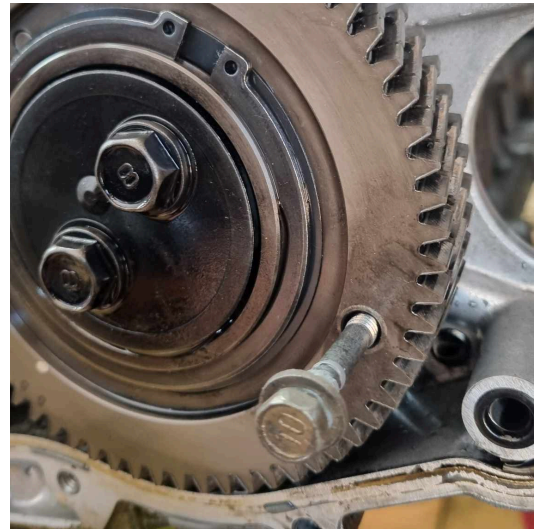
Fuel pump belt gear (4 x m8 bolts)

Remove cam gear bolt

Pry off cam gear - locate key way and ensure safe.

Remove rear cam belt cover

Remove front lower timing cover



Step 4:

Pack some clean rags between the sump flange and the lower crank gear to ensure nothing falls in the sump.

Clean the marking face between the scissor gear and crank as well as the scissor gear and fuel pump. Using a paint pen mark the **three** gear interfaces to allow for the correct re timing.

Step 5:

Install m6 x 60 bolt into the timing scissor gear. **DO NOT REMOVE ANY FUEL PUMP BOLTS PRIOR TO THIS STEP OR YOU WILL END UP VERY SAD.**

Failure to install this bolt before undoing any fuel pump bolts will mean the whole front of the motor needs to be timed.

Step 6

Remove power steering pump

Remove all fuel lines from pump

Undo 2 x 12mm nuts on fuel pump half way

Remove 19mm bolt in fuel pump gear

Using a 2 prong pulley or soft face hammer break the taper between the fuel pump and drive gear.

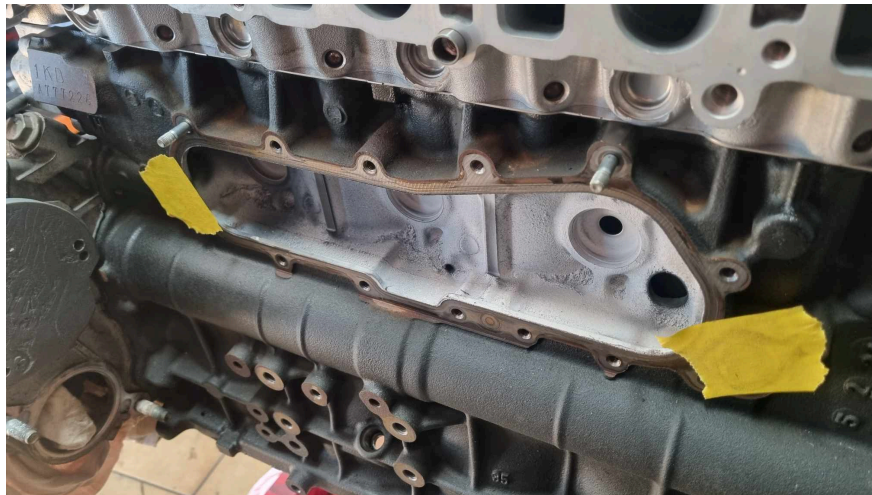
Remove the OG fuel pump

Remove the fuel pump gear

Remove oil cooler

Remove 2 m6 studs in block for oil cooler

Once the oil cooler is removed please cover the main oil gallery as shown



Step 7: *** If the timing case is already off the motor start here***

Remove 2 m8 studs in timing case for fuel pump (put aside you will reuse these)

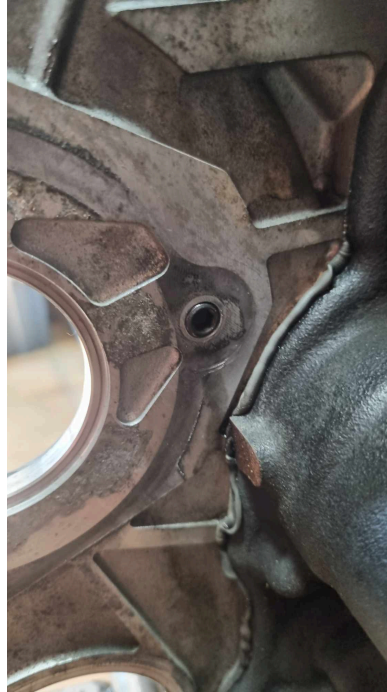
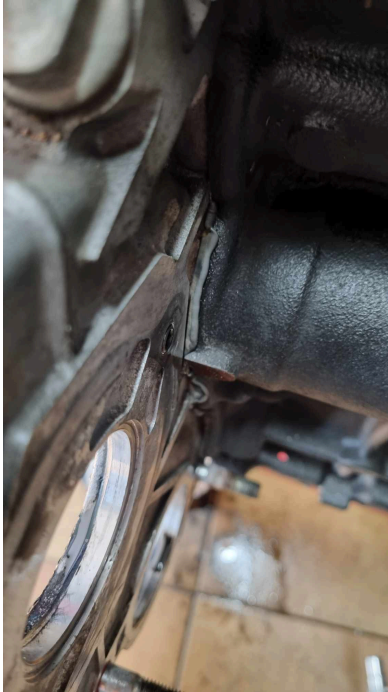
Figure below shows how the motor should look at this point



Step 8:

Take two M8 x 8 grub screws from the kit, apply red loctite to both and insert back to back in the original 1KD stud/bolt hole. (If you have a prado timing case, just insert a single M8 grub screw from the back.

Ensure the grub screw to the outside of the motor is lower than the pump mounting surface



Step 9:

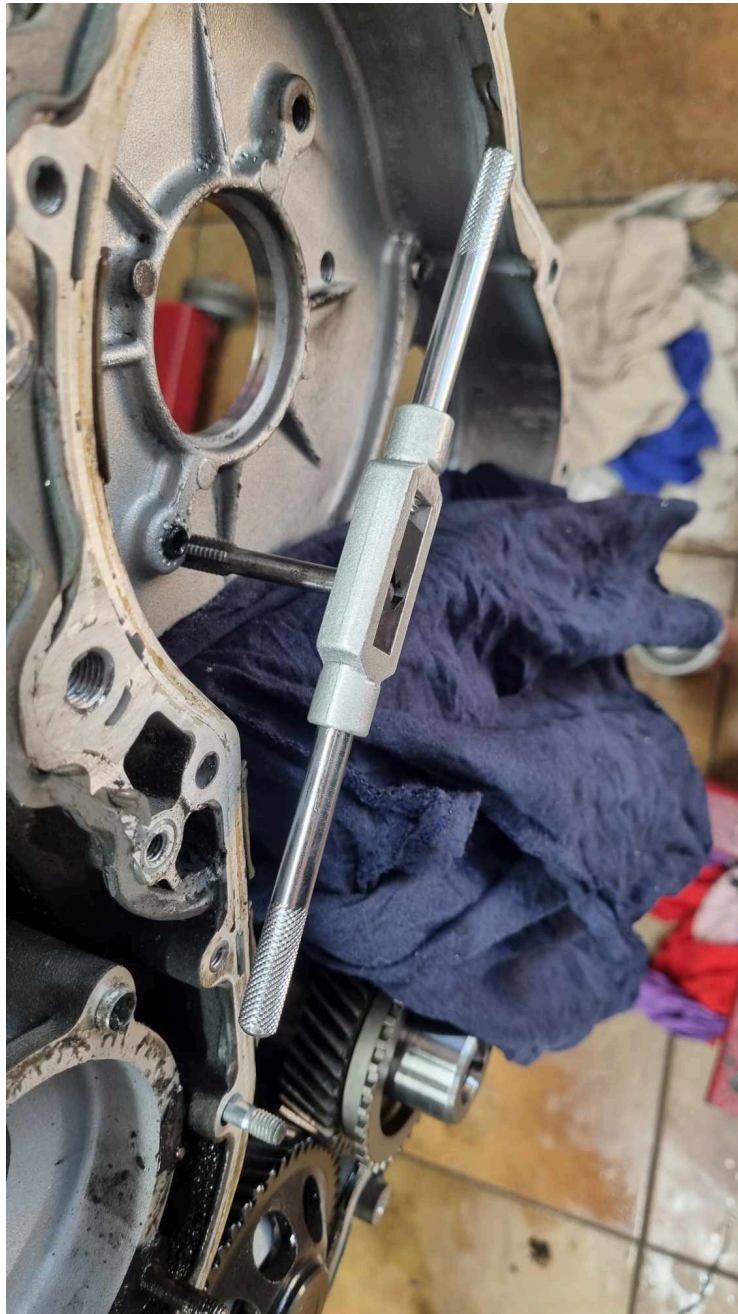
Using a M8 countersunk bolt, tighten the jig to the outside of the case as shown.



Step 10:

Using the 7mm drill bit, drill through all 3 7mm holes in the jig. It is important you are square to the timing case. Drill with light force. At this point if you are using a drill press, use a center punch to mark the holes, then remove the jig and drill each hole with the timing case clamped in the drill press.

Complete the holes by using the M8 tap with some lubricant - if you are doing this job in the car, it is easier to tap from the front of the case as shown.



Step 11:

Insert the remaining 2 grub screws in the other old fuel pump bolt hole, use loctite. Once finished go around on the inside with a pin punch and push material into the grub screw, this is just an extra safety measure.

Put the two original m8 pump studs in the lower 2 holes using loctite or hydraulic thread sealant.

**Step 12:**

If you didn't option for a fuel pump from KaizenFab in your kit (supplying your own pump), you will need to cut 6mm off the front of the thread on the fuel pump - Ensure all ports are plugged - wrap the pump in a rag, and then put the pump inside a plastic bag with only the shaft exposed. Cut the front of the shaft off and use a file to deburr the pump - use the original nut to test the thread - Remove the Keyway.

Clean thoroughly with brake cleaner - clean the inside of the shaft extension with brake cleaner - apply red loctite and spin onto the front of the pump - ensuring that the back of the extension sits flush with the original shaft - if it does not you will need to cut more off the shaft.

Step 13:

Re-install the pump, use the m8 SHCS with hydraulic thread sealant in the top hole in the pump and the original fuel pump nuts on the lower. Install the gear on the pump - ensuring the timing is correct - torque the pump gear nut to the OE spec. Remove the scissor gear locking bolt.

Step 14:

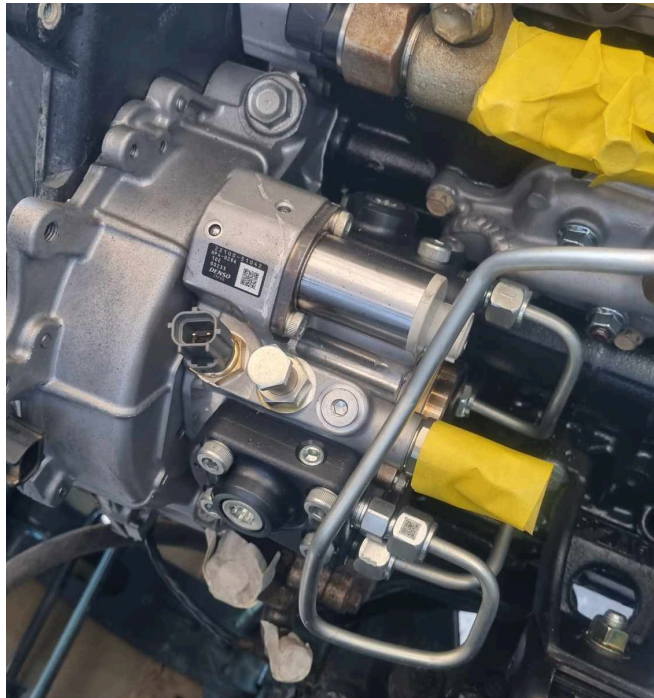
Use a small amount of aviation gasket sealer or Loctite 515 around the main oil gallery ports on both sides of the gasket and re-install the oil cooler - using the 2 supplied bolts to replace the studs. - Fit a new oil filter.

Step 16:

Extend the Fuel temp sensor wires by 100mm, you MUST solder and heat shrink these wires. If you don't want to solder you can unwrap some of the harness and move mounting points till the wires reach

Step 17:

Fit high pressure fuel line from pump to rail, we have had some of these spring back after sitting for a while - if they don't fit perfectly you will need to persist a little.



Step 17:

Now that the fuel pump is installed, put everything else back together, start the car and let it idle for 5-10 minutes. It is a good idea to use a scan tool to do an SCV relearn.

Once an SCV relearn is completed it is safe to drive the car calmly - it is suggested that you go see your local tuner to check the fuel rail pressure is as desired by the tuner after the upgrades.