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### Diesel pump top leak fix



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#### Author

#### Message

**jonscw**

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Joined: 03 May 2003  
 Posts: 169  
 Location: Bosnia mostly and  
 Linslade, Beds when in UK

Posted: Wed Mar 10, 2004 23:03 Post subject: Diesel pump top leak fix



One for the moderators and FAQ if they approve 😊

Several times lately I have helped some members with their diesel injection pump leaks. In my experience most leaks are from the top plate of the pump, usually on older models. This is usually due to the top plate seal being the 'old type' which turns-over under continuous pressure within the pump body. This seal has been modified in recent times to prevent this happening. The throttle 'O' ring is also a potential problem and is dead easy to fix, either on its own or at the same time as doing the plate seal.

I have read tales of 300 quid to fix this problem which is a matter of at maximum 90 minutes of your time and a generic seal kit for 8 -11 quid. If you have half a mechanical brain you can do it, and yes, I know it breaks all the rules about diesel repairs having to be in almost aseptic conditions to prevent dust ingress. But believe me, those of us who live and work in some countries with very few if not any dealers, and plenty of wild country in-between, readily accept that we have to do things our own way. As for this fix, there is never usually any 'after-effect' from dirt in the pump either !

The injection pumps on most Japanese vehicles that are not goods vehicles are based on the Bosch 'VE' patent, so seals etc. fit all makes of that design and can be sourced in many places. (Same goes for Denso or Zexel pumps on a lot of Toys).

Note, this does not involve removing the pump or upsetting the injection timing. So the front shaft seal is not part of this fix. If you have diesel getting into your sump then you have to remove the pump and get it to a good diesel shop to get the shaft seal fixed, and pump re-calibrated whilst you are at it..

So if you can't get to a shop or can't afford to go to one but have got the required seals to do a leak on the top, here is a quick run down on how to do it on the side of the road.

You will need ...

- 5mm allen key preferably of the socket type variety,
- 10mm combi spanner,
- 6 inch steel rule or similar thin flexy short steel strip,
- 8-10mm pin punch (can be useful but not essential),
- Small hammer (can be useful but not essential)
- 17mm combi spanner (can be useful)
- needle nose pliers,
- a pair of fairly small screwdrivers,
- wife's fingernails - or grow your own !
- felt tip pen.

First of all, give the whole area a good cleaning with gunk or similar degreaser spray and then hose off and run the engine till all the area is dry - except for the diesel leaking out of course !

Here goes ...

disconnect return line and fuel leak-off rail hose (can remove banjo bolt and banjo if you feel it makes the job easier) & boost enrichment aneroid hose if applicable. But best to leave them all fitted if you can get at the allen cap screws on the top plate.

No point in going into the detail of removing all the accessories etc on top of the pump. If you are attempting the job I accept that you are sensible enough to dismantle the minimum, take precautions and note where each bit is removed from. (We are sensible Paj owners after all, aren't we?)

Remove linkage from throttle arm.

Look at the throttle arm and study where the throttle return springs sit, remove the end that is hooked around the top of the pump top cover, the throttle arm should now move quite easily with a little spring tension at the full throttle end of travel. (With practice you may choose to leave the springs at full tension and lift off the arm and re-install the same way).

Look carefully at the throttle arm shaft and you will see a groove machined across it (if it is obscured by yellow paint scrape it off) get the ruler and draw a line on the throttle arm with the felt tip pen to line up with the machined groove, this is so you can reinstall it on the same spline. (There may well be a witness mark already scribed on the throttle arm anyway). If lined-up wrong it will either not idle or idle way too fast, but no big deal to work-out later.

Remove the 6mm nut and lift off the arm making sure you keep track of where the springs go.

Undo the 4 m6 cap screws holding the top on ( if they won't come, tap the heads of the cap screws with a pin punch and they will undo easily), as you lift it off, push the throttle shaft down through the top cover, on autos or vehicles with air conditioning you may have to remove 2-3 m6 bolts or cap screws to get rid of the A-C idle up actuator or the kick down cable bracket. You may also have to reverse the idle and max speed screws to get at the cap screws, if so, mark their length so you can refit at the same spot.

Pull out old seal from the cover top and replace, most of the time they have flopped on their side and hence leak, install the new seal, they have superseded the old design so they don't fall over anymore. There are small roundish nibs moulded into and either side of the seal. Its these you need the fingernails for ! A small screwdriver will cut them and defeat the object of the exercise. The rounded end of the 6 inch rule might just be usable for the job, but something straight round-edged and pliable is best - back to the wife ! (sorry, her nails that is).

Replace throttle shaft 'O' ring. Reinstall top plate (this is where the swearing may or may not start) put a little diesel on throttle shaft and feed it up through its hole as you lower the top on, at which point you will notice it won't go on. Don't panic yet, tip it up on the front outside corner and try to lower it on rear inner corner first if it still will not go. The max fuel screw tends to catch on the linkage the throttle arm pulls on, holding it up, get your 6" steel rule and slip it in to push this arm forward as you lower the top, now it will drop on. (Well, it could be the third attempt!) If still no joy, walk away and come back in 5 minutes and have another go, it might take you one go or 10 but it will eventually go on. Hold the top down as you get the 4 cap screws reinstalled.

Line up your marks on the throttle arm and shaft and reinstall the nut, leave the springs disconnected for the moment, refit your fuel lines and start it, if it idles fine you're on the right spline, if not recheck your marks.

Reassemble in reverse order from there.

There are 2-3 other o-rings, one under the cold start advance unit (if applicable) one at either end of the advance mechanism, all three o-rings are the same but they rarely leak compared to the top cover gasket.

Put 2-3 hours to one side for your first one, with practice you will be done in about 90 minutes on a turbo pump and under an hour on the non-turbo's.

Thanks go also to my mate Craig in NZ who does a lot of this work too.

Cheers

Jon in Bosnia

PS. Some have asked about my Vanuatu plate – yes there are 4 palm trees on it, but I still got a salute from a copper the other day !

MK1 1988 SWB 2.5td (with chrome wheels !) in UK.

1992 Toyota LandCruiser HZJ80 ex UN surplus in Bosnia.

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**Guest**

Posted: Wed Mar 10, 2004 23:08 Post subject:

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Top Post Jon,  
that took some writing and memory..... 8) 8)

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**jonscw**

\*\*\*



Joined: 03 May 2003  
Posts: 169  
Location: Bosnia mostly and  
Linslade, Beds when in UK

Posted: Wed Mar 10, 2004 23:13 Post subject:

[quote](#) [report](#)

Cheers Stevo,

You picked it up quickly too !

My only regret is that I forgot to take digi pics when I last did it in September. Ho hum.

Still only 2 wheels on your Paj then ?

Cheers

Jon

MK1 1988 SWB 2.5td (with chrome wheels !) in UK.

1992 Toyota LandCruiser HZJ80 ex UN surplus in Bosnia.

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**rambrose**

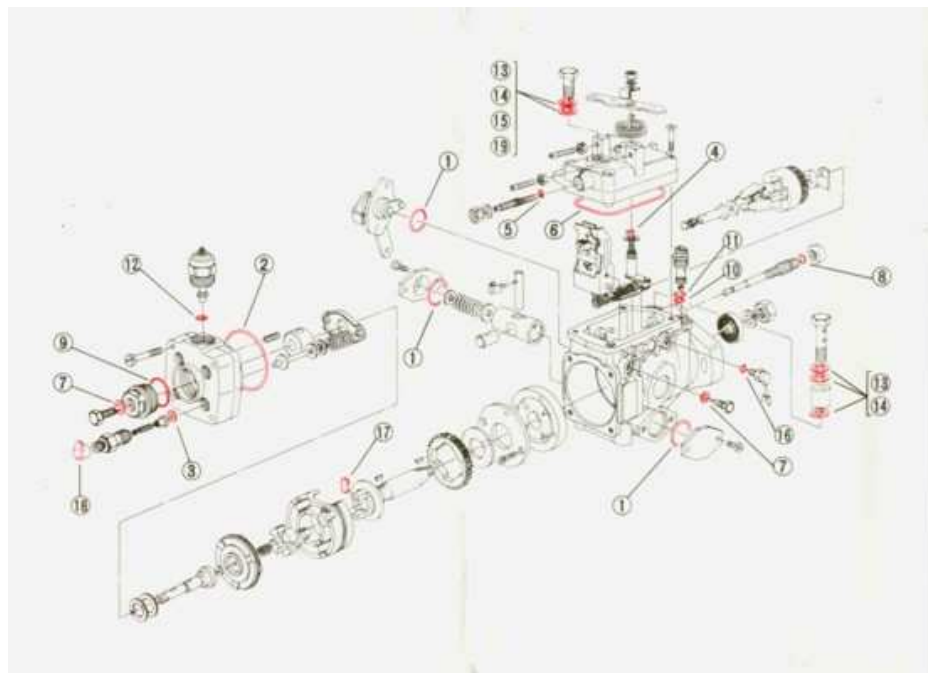
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Joined: 15 Jul 2004  
Posts: 454  
Location: Plymouth

Posted: Tue Dec 07, 2004 22:32 Post subject: Diesel fuel pump seal top leak fix FAQ add on

[quote](#) [report](#)



No. 146600-1120 ZEXEL REPAIR KIT

1 146600-0800 O-ring QTY3 Timmer cover CSD cover

- 2 146600-0000 O-ring QTY1 Head
- 3 146433-0100 Gasket QTY6 D•V•H
- 4 146600-0100 O-ring QTY1 Control lever Shaft
- 5 146600-1200 O-ring QTY1 Full load adjusting Screw
- 6 146600-4400 Seal Ring QTY1 Governor cover
- 7 026508-1140 Gasket QTY3 Pivot bolt Air drain head
- 8 146600-0400 O-ring QTY1 Governor Shaft
- 9 146600-0500 O-ring QTY1 Head Plug
- 10 146600-0600 O-ring QTY1 Regulating Valve
- 11 146600-0700 O-ring QTY1 Regulating Valve
- 12 146600-1700 O-ring QTY1 Solenoid valve
- 13 026512-1840 Gasket QTY5 Fuel inlet, Outlet
- 14 139512-0200 Gasket QTY5 Fuel inlet, Outlet
- 15 029331-4010 Gasket QTY2 Fuel Outlet, Solenoid timmer
- 16 146600-1300 O-ring QTY1 N-Picup
- 17 146202-0100 Damper QTY2 Gear
- 18 029921-2010 Cap QTY6 Holder, D-V
- 19 139514-0200 Gasket QTY2 Fuel Outlet, Solenoid timmer

I don't know if it should read timer and Pickup but that's what was on the diagram supplied with the seals

With the pump out give it a good scrub with degreasant.

Disconnect the clips holding the 2 metal water pipes and disconnect the banjo bolt around the other side.

You may not have these fitted



Disconnect the terminal under the green boot



Unhook the top spring. Get the tipex/felt pen to hand.  
Press down on the base plate to keep it still while undoing the nut.  
Keep holding it down and lift off the top spring exposing the base plate.  
Mark the base plate so you can install it on the same spline.  
If lined up wrong it will either not idle or idle way to fast but can be adjusted when on the car.  
Unhook the lower spring and lift off.



Undo the 4 allen key bolts (5mm allen key) holding the top on. They are all the same length.  
As you lift it off, push the throttle shaft down through the top cover. Fuel will leak out at this point!







Replace the top cover seal. And the o-ring on the throttle shaft.

Jonscw states in his post of 2-3 other o-rings that can be changed. One under the cold start advance unit (if applicable) and one at either end of the advance mechanism. All three o-rings are the same but they rarely leak. I wasn't sure where these are and as they rarely leak I left it.

Smear some fuel around both new seals.

Push the throttle shaft back through the top cover.

Hook a piece of string around the throttle arm linkage. No knots though.



As you lower the top cover it will hit the throttle linkage.

Pull on the string and it will drop down.

Carefully pull the string out.

Bolt the 2 halves together.

Fit the throttle base plate and lower spring. Make sure the spring is hooked correctly and sides of the spring are contained under the base plate.

Line up the shaft with your marks and hold down.

Pick up the upper spring assembly.

Place assembly over shaft, Hook spring end around pump body. Still holding onto base plate.

With slight downward pressure gently rotate upper spring assemble anti clockwise until the keyway engages with base plate.

Still holding fit the spring washer and nut to secure it all.



Re-fit the black electrical thingy on top of the springs (A/C idle up actuator?).  
Note there is a slot in the bottom, which needs to line up with the throttle shaft.  
Moving the base plate may assist in getting it located

Re fitting the rest is straightforward.  
Do check before fitting pump that everything is tight. You don't want to take it out again to fix leaks caused by a loose fitting!

If when you first run the engine, it doesn't want to idle then you can re-position the throttle base plate in situ.

Obviously the intercooler has to be off.

Get the electrical harness out of the way.

The boost hose into the top of the fuel pump can be left as can the coolant pipe.

Disconnect the black throttle cable and the plastic dog bone linkage.

Very carefully remove the spacers on the black electrical thingy on top of the springs. (A/C idle up actuator?) and then remove the actuator.

Be very careful not to drop the spacers.

Only the top spring needs to come off.

Push down on the base plate to stop it moving as you remove the spring assembly.

You will only need to rotate the shaft a spline or 2.

Rotate the shaft anti clockwise to increase the rpm.

Refit and test.

Do have a check for leaks before fitting the intercooler.

Used to have 2.8 LWB Exceed L-Reg.

Now rides a Pan European

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**idratherbesurfing**  
LifeTime Member



Age: 57  
Zodiac: ♋  
Joined: 27 Mar 2008  
Posts: 4147  
Location: UK

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**Tonka**  
Events rep (North East)



Age: 42  
Zodiac: ♋  
Joined: 22 Aug 2004  
Posts: 1975  
Location: Lincoln, Lincolnshire

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Posted: Mon Dec 08, 2008 23:38 Post subject: DIY fuel pump seals

[quote](#) [report](#)

is it hard to do? 😊

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Posted: Tue Dec 09, 2008 0:02 Post subject:

[quote](#) [report](#)

Depends how able you are mate..... 🤔

Tonka (Sean)

-----



**2000 V6 OMEGA CDX** Sounds great, goes like shlt off a shovel  
Eddis Cyclone 5 Berth

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**idratherbesurfing**  
LifeTime Member



Age: 57  
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**Tonka**  
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Age: 42  
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Joined: 22 Aug 2004  
Posts: 1975  
Location: Lincoln, Lincolnshire

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Posted: Tue Dec 09, 2008 0:08 Post subject:

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pretty able 😊

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Posted: Tue Dec 09, 2008 0:09 Post subject:

[quote](#) [report](#)

Its spanner time then 😊😊😊😊

Tonka (Sean)  
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**2000 V6 OMEGA CDX** Sounds great, goes like shlt off a shovel  
Eddis Cyclone 5 Berth

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**BIG RED**  
\*\*\*\*\*



Age: 52  
Zodiac: ♋  
Joined: 31 Oct 2008  
Posts: 1383  
Location: NORTHWICH  
CHESHIRE

[profile](#) [pm](#)

Posted: Tue Dec 09, 2008 12:42 Post subject: Re: DIY fuel pump seals

[quote](#) [report](#)

**idratherbesurfing wrote:**

is it hard to do? 😊

its not hard to do if you dont mind getting your hands dirty and the worst bit i found was getting that 14mm bolt underneath the pump at the back.

also set the bottom pulley on tdc camshaft will, (or should), have a punch mark stamped on it. and if you look very hard on the pump sprocket theres a little nick out of one of the teeth.that needs to line up with the t/turbo or n/non turbo. it looks just like the milling machine has nicked it.

any way ive seen you offering to do a cylinder head for a guy and if you can do that you can do the pump seal!

if you take the sprocket off, it's on a tapered shaft with a wudruff key - i used a big screwdriver and tapped it in both sides and it popped off quite easy. the shaft seal is behind that mounting plate.

dont undo any of the back of the pump, like me, because all the gubbins fell out and ive got to put it all back in(numpty). drill a small hole in the outer edge of the seal and screw a self tap screw in it and it will pull out easy with pliers.

good luck 😊



[Back to top](#)**dave68**

Guest

Posted: Sun May 24, 2009 18:25 Post subject: pump seal 2.8td



just done pump seal,all back together and running but,seem to have a single black wire left over on the pump loom,all the water temp sensor wires are on,any one any pics of were the wires from the pump loom go,

[Back to top](#)**andyb66**

Newbie



Joined: 08 Oct 2009

Posts: 1

Location: Bournemouth

Posted: Thu Oct 08, 2009 17:30 Post subject:



Apologies for digging up an old thread for my first post.....

....but I am about to attempt this on a Pajero and was just wondering if there is a 'bleeding procedure' that I should follow after reassembling the IP.

I am a fairly competant mechanic, I have just not worked on this engine before.

Many thanks 😊

[Back to top](#)**PHILLIP & TERESA**

Newbie



Joined: 23 Nov 2009

Posts: 3

Location: SWANSEA

Posted: Tue Nov 24, 2009 19:31 Post subject: 2.8Pajero stalling



Thank you Jon and Rambrose for taking the time to give us this info. Will let you know how we get on. Phil

[Back to top](#)**andy\_pajerotdi**

LifeTime Member



Age: 30

Zodiac: ♈

Joined: 23 Dec 2009

Posts: 649

Location: sussex

Posted: Wed Jan 27, 2010 12:35 Post subject:



does this cover all models of engine? i have the 2.5 tdi and wanted to check the pump was the same for all ??

[Back to top](#)**manderson**

\*\*



Age: 26

Zodiac: ♈

Joined: 11 Jan 2006

Posts: 88

Location: glasgow scotland

Posted: Thu Mar 11, 2010 18:23 Post subject:



As above can someone confirm this is a issue on the 2.5 aswell as i have the leak and hoping to use this guide

"91" 2.5td swb paj

Skoda fabia vrs

[Back to top](#)**davem3man**

\*



Age: 45

Zodiac: ♈

Joined: 18 Feb 2009

Posts: 12

Location: Harrogate

Posted: Sat May 08, 2010 21:27 Post subject:



Hi all,Just done my top seal today on my mk2 2.5,what a numpty i am put it back together and it did not run well at all,lots of head banging and then it came to me 😊 i had put the fuel feed bolts the wrong way 😊 17 mm and 14 mm lol cost me abut 2 hours.. all working now thanks to you guys CHEERS Dave

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