

Glow Plug Removal

This procedure should only be used on vehicles year model 2003 and earlier.

A big thanks goes first and foremost to Robby (Runonbeer) for teaching me about all things TDI, and for taking the pictures.

A glow plug that's broken off in the head will ruin your day, but it's nothing that some patience, logical thinking, and some readily available tools can't handle.

Usually you discover a seized plug when you try to remove it, and the hex wrench flats seem to spin in the head without unthreading. The outer sleeve of the plug has broken, leaving the threaded portion attached to the top of the plug via the center element. In order to remove the plug, we must remove the relatively soft element material, use an internal extractor to bite into the outer sleeve, and unthread the plug.

Please pay particular attention to underlined sections of this how to. These sections address precautions that should be taken to ensure a safe working environment.

Unfortunately, we decided to write this how-to after we'd already started the job, so the pictures are a little lacking. Also, the experienced TDI club member will notice that the pictures pertaining to the removal and install of the fuel lines are from a 1Z engine, not the ALH shown with the seized plug.

Tools:

- Ratchet

- Sockets

 - 10mm deep

 - 13mm

 - Long extension

- 17mm open end wrench (or injector line wrench if you have one)

- Drill

- Drill bit index (one with lots of small sizes)

- Compressed air or vacuum for cleaning

- Internal Extractor

- *Something to drive the extractor, such as a tap driver or appropriate socket

- Torque Wrench

- Vacuum pump (Mity Vac or other)

Begin by allowing your car to cool. (perhaps by participating in some engaging banter about lubricants on the TDIClub forums)

Enable access to the trouble plug by removing the high pressure fuel lines.

Loosen the 17mm flare nuts on the tops of the injectors and hydraulic head of the injection pump. It's best to just 'crack' the nut open on each side before unthreading the nut. This prevents the line from twisting as you unthread it because the other end

of the line is still held in place. It helps to place the wrench on the nut, and bump it with your palm to break them loose. This prevents busted knuckles and twisting expensive lines. Place some rags under the injection pump to catch dribbling fuel.



Cap the injectors and pump appropriately to avoid contamination.



Remove the injector retainer nearest the siezed plug using the 13mm socket, extension, and ratchet.



Remove the hexagonal top of the seized plug.

Place the deep 10mm socket with extension over the trouble plug. Work the extension side to side repeatedly until the element breaks. Take care not to mar the head, especially the top threads of the plug hole.



You should now have half a plug broken off relatively flush with the head. Note the center element, and outer sleeve.



Remove the center element from the plug.

Center the element within the outer sleeve with a small common screwdriver, seal pick, or otherwise. Protect your eyes from drill filings. Drill the smallest hole you can into the center of the element about 2mm deep. Use progressively larger bits until the element is completely removed about 3mm below the remaining outer sleeve. Now continue drilling using a bit slightly smaller than the ID of the outer sleeve of the plug. It helps to use compressed air to keep the drilling area clean of shavings. Since the outer sleeve of the plug is harder than the element, it acts as a drill guide. Care must still be taken to drill on the plug's axis, but this helps. Only drill deep enough that your internal extractor can get a bite; about 30mm. Do not drill through the plug, as this will introduce foreign material to your engine.



Extract the plug using the internal extractor.

Insert the internal extractor and turn it counter-clockwise. It should bite the outer sleeve. Unthread the plug. Since this plug is seized, it will require a significant amount of torque to remove. Use an extension as necessary, especially if you're working on #1, as you have limited space for levers between the head and the injection pump. Ensure that no foreign material will fall into the engine when the plug is removed by using compressed air to expel debris from around the plug.

*A tap driver with ratchet driver (\$9 at Sears) or an 8 point socket is preferable if the internal extractor has a square driver. A 12 point socket works as well, although it must be precisely the right size to transfer enough torque without slipping.



Install a new glow plug. Use anti-seize, and torque to 11ft-lbs.

Install the injector retainer. Use anti-seize, and torque to 15ft-lbs.

Install the glow plug harness.

Re-install the high pressure lines.

If you don't have the fancy injector wrench, you'll need to install #1 and #2 first. Thread the flare nuts onto the injectors and pump finger tight, then snug them.

Prime the fuel pump.

Remove the cloth insulated fuel return line from the barb on the #4 injector. Apply vacuum to this line until fuel (not fuel bubbles) appear in the vacuum pump line. Reattach the cloth line to the injector.



Prime the high pressure fuel lines.

Crack open and unthread the flare nuts on top of all 4 injectors. Cover the injectors with rags. Keep pets, kids, or anything that could be harmed with high pressure fuel away from the work area. Crank the car for about 5-10 seconds. Fuel should be present on top of the flare nuts. Snug the nuts. Start the car and let it idle for a minute or so to remove any remaining air from the pump.

Take a well deserved sigh of relief.

