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### Integrated Engineering FSI High Pressure Fuel Pump Installation Guide (Part # IEFUVC1)

Thank you for purchasing another high quality Integrated Engineering product! This instruction sheet is used for installation of the Integrated Engineering FSI high pressure fuel pump internals kit. This kit needs to be installed by a professional or by an experienced technician. Integrated Engineering is not responsible for any damage caused by incorrect installation.



#### Kit Contents:

- (1) – IE Nitride Fuel Pump Piston
- (1) – IE Nitride Fuel Pump Cylinder
- (1) – IE Titanium Spring Retainer
- (2) – IE Fuel Pump Spring Retainer Keepers
- (1) – IE Fuel Pump Retaining Nut w/Moly Seal Installed
- (1) – Molykote Assembly Grease

#### Tools Needed:

- Table Vise
- Clean Deep 18 mm Socket
- 3/8" Ratchet
- Calibrated Torque Wrench
- Non chlorinated Brake Parts Cleaner
- Clean Lint-Free Rags
- Adjustable Wrench

Before beginning the installation, unpack and inventory all components on a flat surface and verify that all pieces necessary are there and undamaged before proceeding.

**BEFORE INSTALLING THE IE HPFP, PLEASE TAKE TIME YOU INSPECT THE CAM FOLLOWER AND CAMSHAFT LOBE. REPLACE THE CAMSHAFT IF THERE ARE ANY SIGNS OF DAMAGE. REGARDLESS OF WEAR OR MILEAGE IE RECOMMENDS REPLACING THE CAM FOLLOWER.**

1. Establish a clean working environment free of contaminants and dust. Make sure that your working surface and vise are clean of grease, metal shavings or any dirt/debris that could be transferred to internal assembly of the fuel pump.
2. After cleaning your working area, place a lint free rag on the working surface to ensure that you have a clean working surface.
3. Remove the high pressure fuel pump from the vehicle. We recommend using the procedure in the Bentley repair manual.
4. If the fuel pump body is dirty, clean it using the non-chlorinated brake parts cleaner and a rag. Make sure the pump is cleaned thoroughly as you do not want any chance of contaminants entering the fuel pump during the rebuild.
5. We recommend using a fuel pump from a vehicle that is actively driven. If you are using a core fuel pump or a fuel pump that has been sitting, IE recommends that the pump be sent to us to be cleaned internally, assembled with the new components and tested. This will ensure the components perform to their maximum potential and the integrity is not compromised.
6. Place the fuel pump into the vise with the spring facing down towards the floor and secure the pump. Be sure to wrap in a rag or use soft jaws so pump is not damaged in vise.
7. Using your adjustable wrench, remove the low pressure fuel sensor that located on the top of the pump body.
8. After the sensor has been removed, use a shop rag to soak up any fuel the pump might retain. Rotate the fuel pump in the vise so that the spring and retainer are pointed up, fasten securely (Figure 1).



Figure 1

9. Slide a clean 18mm deep socket over the spring and retainer on the fuel pump. With the 3/8" ratchet, turn the center retaining nut counter-clockwise to loosen the retaining nut. Remove retaining nut (figure 2).



Figure 2

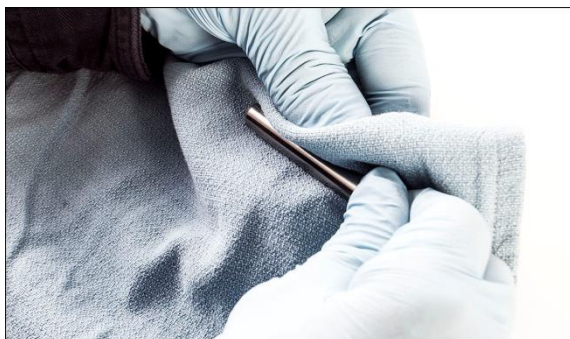
10. Remove the fuel pump from the vise. Place the fuel pump down so that the exposed cavity where the retaining nut was contained is face down on your clean working surface. This will help reduce the chance of any contaminants entering the fuel pump.

11. The only internal part that will be used again will be the spring, so you can set aside the factory nut, piston and cylinder. Holding the retaining nut in one hand pull the stock piston out of the retaining nut. Once the piston has been removed, pull the spring off of the retaining nut. Place all parts onto your clean working surface.



**Figure 3**

12. At this point make sure you wash your hands and that your fingers are not greasy or oily. We recommend using latex gloves for reassembly.
13. Clean the inside cavity of the fuel pump using brake parts cleaner. Also clean the spring that is going to be reused.
14. Open the box that contains the IE HFPF hardware and lay all of the components out.
15. Clean all components as contaminants may have been introduced during packaging, shipping or handling (figure 4). Please ensure that you are using a lint free cloth or rag.



**Figure 4**

16. After cleaning all of the new fuel pump components, place the fuel pump cylinder into the supplied fuel pump retaining nut. You will notice that one end of the fuel pump cylinder is substantially larger in diameter than the other end. Place the larger of the two ends into the retaining nut (Figure 5).



Figure 5

17. Open the small packet of grease and apply a light coat along the fuel pump piston. Remember that a little goes along way (figure 6).



Figure 6

18. Using the fuel pump piston as a guide, gently slide the piston through the cylinder. Make sure the cylinder is firmly held in the retaining nut as you do not want to damage the seal. Start by sliding the pointed portion of the piston into the back of the cylinder. If you find resistance when installing the piston into the cylinder, spin the piston in between your fingers while pressing the piston into the cylinder. **DO NOT FORCE THE PISTON INTO THE CYLINDER!** These tolerances are very tight and damage to the piston or cylinder could be the result of force. If the piston does not slide freely into the cylinder, inspect the cylinder and piston for contaminants that might be hindering the installation of the components and start the process over (figure 7).



Figure 7

19. After the piston has been installed into the cylinder, wipe any residual grease from the back of the fuel pump cylinder (figure 8).



**Figure 8**

20. Install the spring onto the fuel pump retaining nut. Make sure the spring is firmly seated on the retaining nut (Figure 9).



**Figure 9**

21. Install the spring retainer onto the fuel pump spring. Apply some pressure to the fuel pump spring so that it is fully seated on the retaining nut (Figure 10).



**Figure 10**

22. Place the fuel pump cylinder on your clean working surface so that that the spring and retainer are pointed up. Apply equal pressure to each side of the spring retainer and compress the fuel pump spring. With the spring slightly compressed, insert the keepers into the spring retainers. Make sure you are installing the thinner end of the keepers into the retainer. When correctly installed, the retainers will seat into the groove located on the fuel pump piston. Install both keepers and then release the pressure from the spring (Figure 11).



**Figure 11**

23. With both keepers installed into the retainer and the installed correctly onto the spring, the keepers should sit flush with the spring retainer (figure 12).



**Figure 12**

24. Apply a light coat of grease to the fuel pump retaining nut o-ring and thread the nut into the fuel pump. If you feel a firm resistance when threading the retaining nut into the pump, verify the cylinder is correctly installed as mentioned in step 17. Once you have confirmed that all components are installed correctly, proceed as shown in (Figure 13).



**Figure 13**

25. After the fuel pump retaining nut has been threaded into the fuel pump body, place the pump back into the vise. Using the 18mm deep socket and the torque wrench, tighten the fuel pump retaining nut to 40 ft/lbs (figure 14). After the retaining nut has been torqued into the fuel pump body, remove the fuel pump from the vise and compress the piston a few times to insure the piston is moving freely. Be sure to press on the center of the piston so that the retainer does not become separated.



**Figure 14**

26. If the fuel pump piston compresses freely, reinstall your new IE high pressure fuel pump back onto your engine. Use an additional dab of the included assembly lube to lubricate the wear surface and outside diameter of your new cam follower before installation. Once the fuel pump and all components that were removed from the vehicle have been reinstalled, cycle the key in the ignition a few times to prime the fuel pump. Verify there are no fuel leaks at this point. If none are observed, start the vehicle and once again verify no leaks are present.

*Thank you for purchasing another Integrated Engineering product. We are dedicated to serving your VW/Audi engine and performance needs. Please check our website frequently for new product releases. If you have any questions or concerns about this product please do not hesitate to contact us.*

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