

Dorch Engineering N55 HPFP Lift Kit Installation

DE-LK-1038-EWG

DE-LK-1038-PWG

DE-LK-1049-EWG

DE-LK-1049-PWG



WARNING: Must Read Before Starting Installation

COMPATIBILITY:

This kit is **ONLY** compatible with the latest revisions of Dorch HPFPs. Installation of any other HPFP (including the OEM HPFP) other than a **Dorch HPFP** will result in **damage**!

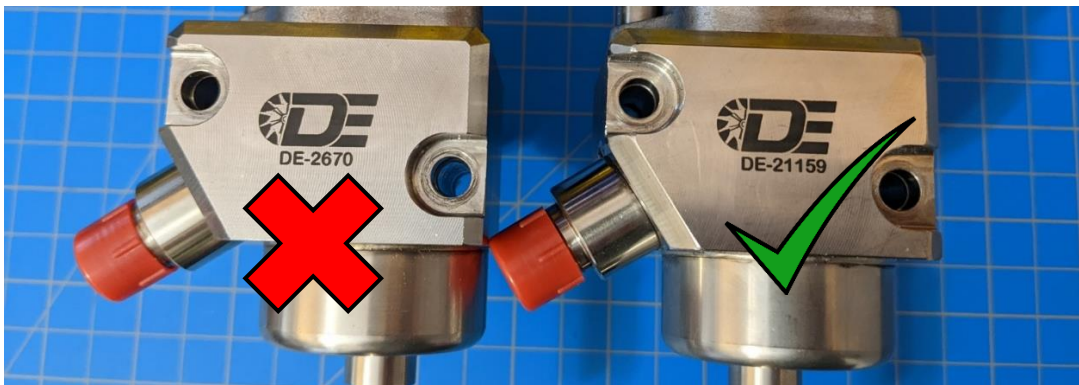
Dorch High Flow 250 Bar HPFP:

All current model Dorch high flow HPFP units are 100% compatible with the N55 lift kit. For reference, a “Dorch OG” HPFP is pictured (below left) next to the current model Dorch high flow HPFP (below right):



Dorch OG HPFP:

All compatible older model Dorch OG HPFPs will have 5 or more digits in the serial number sequence of DE-XXXXX. If you have an early 4-digit serial pump, you will need to send it in for service so it can be updated to the latest compatible revision. Contact info@dorchengineering.com to setup your service.



TUNING:

The N55 Lift Kit **REQUIRES TUNING** specific for your setup (e.g. DS1+N55LK or DS2+N55LK). If your tuner or tuning software does not have the proper mapping for lift kit specific tuning, **DO NOT** do any WOT (wide-open throttle) driving until the proper tune file is loaded! This will result in excessively high rail pressures which can damage your fuel system. The standard Dorch Stage 1 and Stage 2 HPFP tuning settings can get you up and running for daily driving or driving to your tuner, but you **MUST** get the proper tune before any WOT pulls whatsoever. All tuning support is through tuning@dorchengineering.com

PREFACE:

This installation guide is intended to be used in conjunction with the standard Dorch N55 HPFP installation guide. The Dorch N55 HPFP installation guide will provide complete step by step instructions for all preliminary and final steps for the N55 Lift Kit install. This guide covers only the extra steps specific to the N55 Lift Kit. You can expect these steps to take a total of 1 additional hour beyond a standard HPFP job.

Our guide was completed using an E-chassis N55 car, so the steps will differ slightly for the fan removal on an F-chassis car. If additional guidance is needed for a different chassis, feel free to reach out to our support team at info@dorchengineering.com for further assistance.

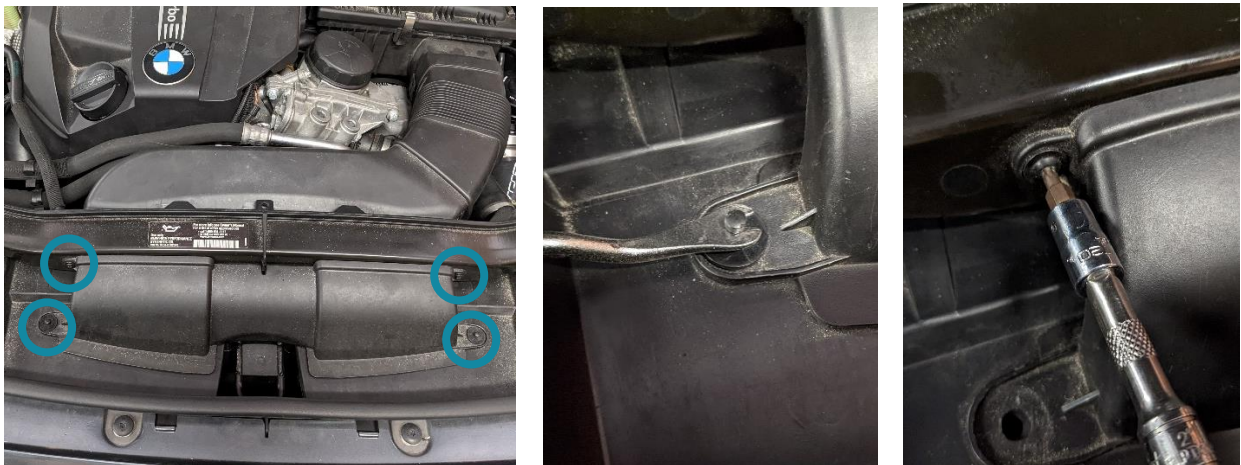
NOTE: A specialty tool kit is highly recommended for ease of installation. Simply google “N54 N55 Vacuum Pump Sealing Cover Remover Installer Tool Kit” and there will be multiple options under \$200.

German Specialty Tools and Freedom Racing usually both stock them [HERE](#) and [HERE](#)

1. Start by removing the undertray panels to gain access to the bottom side of the cooling fan.
2. Remove single T25 fastener securing the fan assembly:



3. Next remove the front half of the fresh air inlet via 2x push pin clips and 2x T25 fasteners:



4. Next remove the rear half of the fresh air inlet by releasing the two tabs and pulling away from the airbox



- Next, remove the fan assembly electrical connection by pressing each tab inward while pulling up. Also release the coolant line from the fan clip.



- Remove the T25 fastener from the upper corner of the fan assembly and release the second clip for the coolant line:



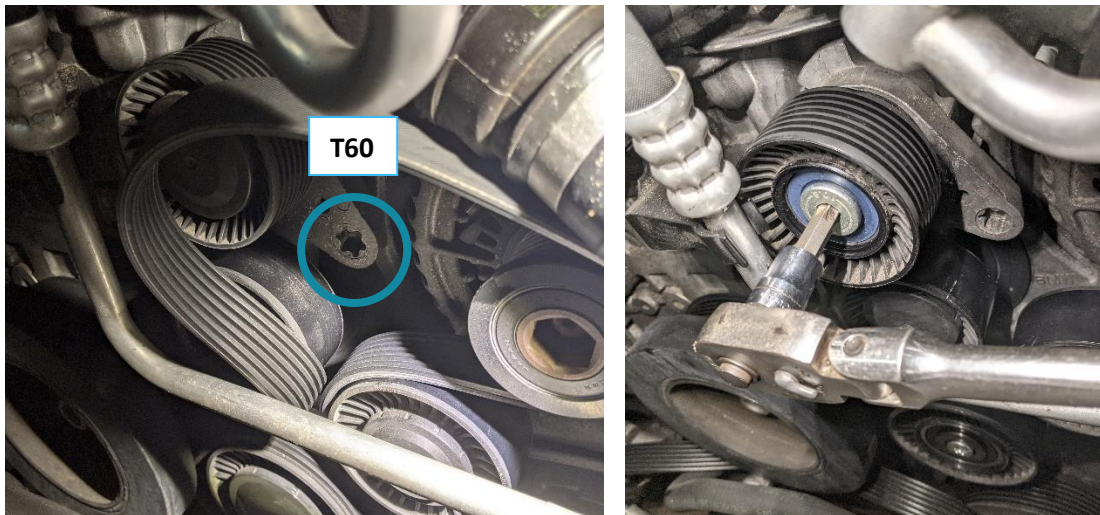
- The cooling fan assembly is now free to lift upwards and out of the vehicle. When starting to lift the fan, be sure to release the tab on the left side (USA driver's side) of the assembly. Simply push the tab rearward while sliding the fan upward to release.



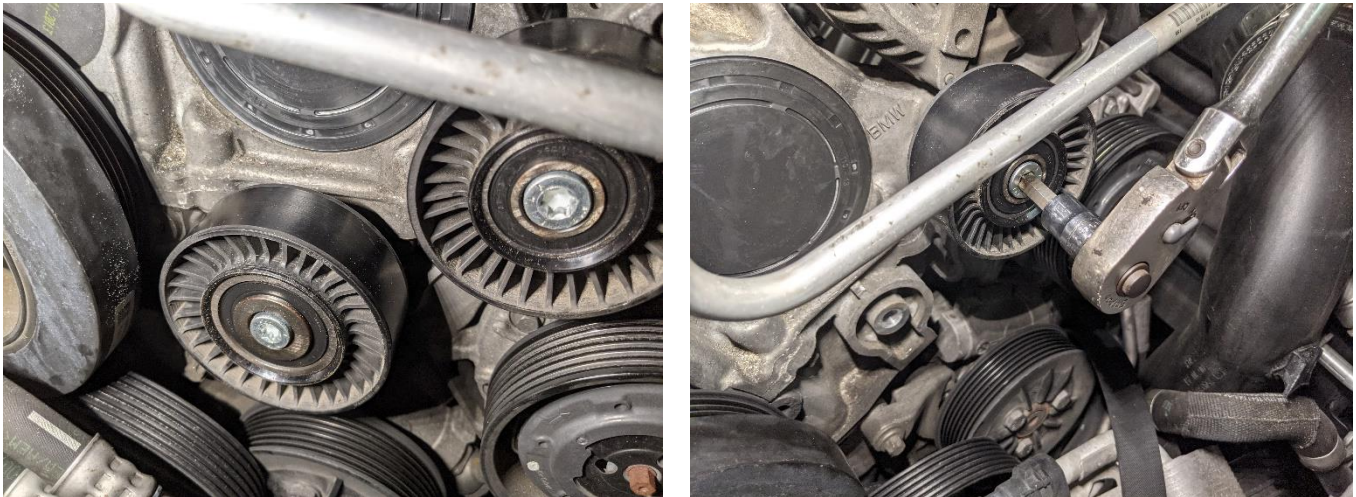
Be sure to lift up slowly with electrical harness and coolant line moved out of the way. Watch for any snags on any other hoses on the lower sections of the fan as it lifts out.

- Using a T60 socket, rotate the serpentine belt tensioner clockwise and remove the belt from the AC and alternator pulleys. **Take note of the belt routing before removal.**

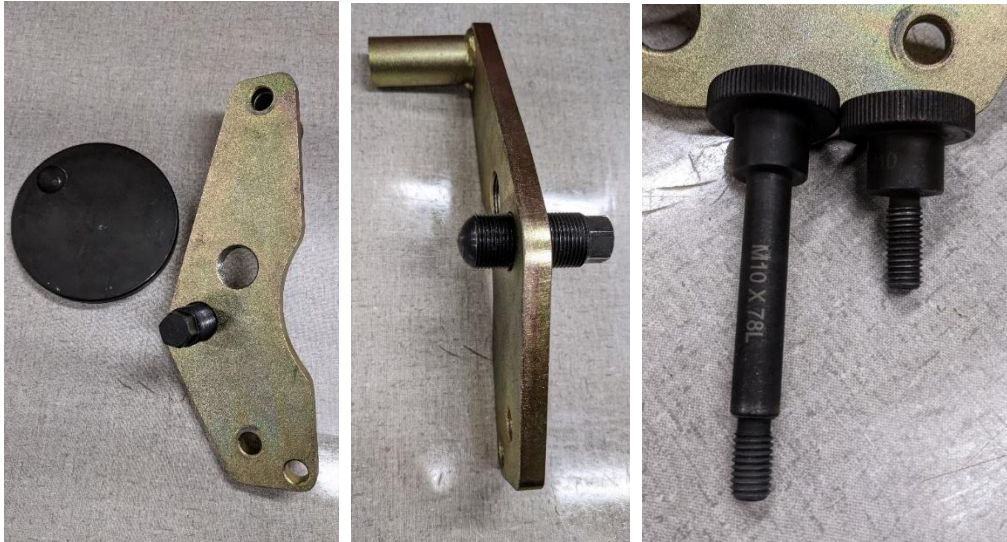
With the belt and tensioner now released from the tensioner, remove the entire tensioner via the single T50 bolt (to access the T50 bolt, the plastic cover must be popped off the pulley with a pick tool).



- Once the tensioner is out of the way, remove the two idler pulleys in the same fashion. First pop off the plastic covers with a pick and then loosen the T50 bolts:



10. There is now sufficient clearance to use the sealing cap removal tool. For the removal of the sealing cap you will be using the rounded stud in the off-center threaded hole, along with the with the matching disc (off-center rounded indentation):



To fasten the tool to the engine, you will need the two thumb screw fasteners pictured above, right.

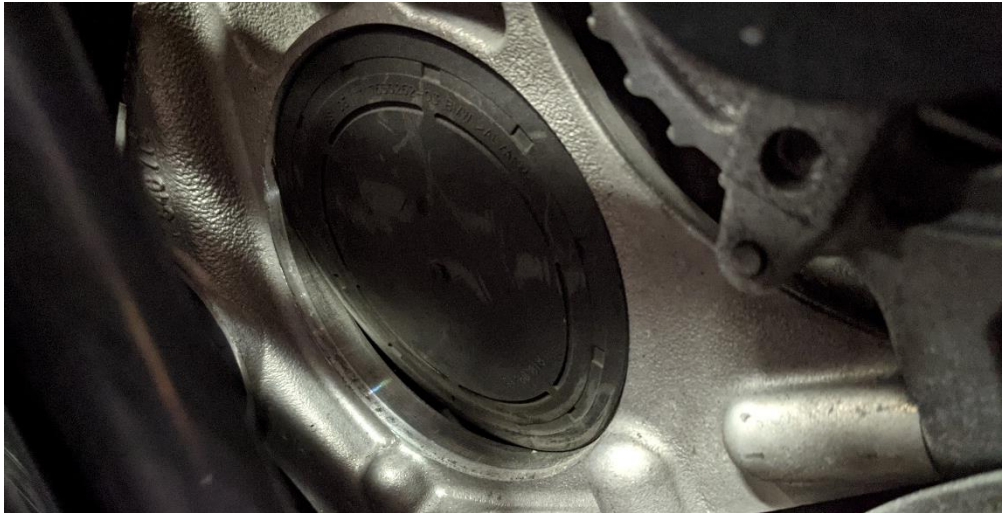
11. Start by threading in the top fastener (M10x78L) and then swing the tool down to line it up for the bottom threaded hole. If the center stud hits the crank pulley before you can swing the tool far enough for the bottom fastener, then you must thread the center stud in further. Once everything is lined up, and the threads are started for both the top and bottom thumb screw fasteners, slide the disc in behind the tool. The indentation should be lined up with the rounded center stud.

Now thread both thumb screws all the way in by hand. **THE FASTENERS MUST BE BOTTOMED OUT TO PREVENT BLOCK DAMAGE.** It should now look like this:



12. Now using a 17mm socket, slowly drive the rounded threaded stud into the plate. As you thread the stud in further, the plate should start angling out. It will need to go in quite far, to reach a sufficient angle to remove the seal.

WARNING: DO NOT thread the stud in all the way blindly. Your timing chain is behind the cover, and incorrect usage of this tool could potentially result in timing gear/chain damage. We recommend going slowly your first time and removing the tool to check progress. This is what it should start to look like:

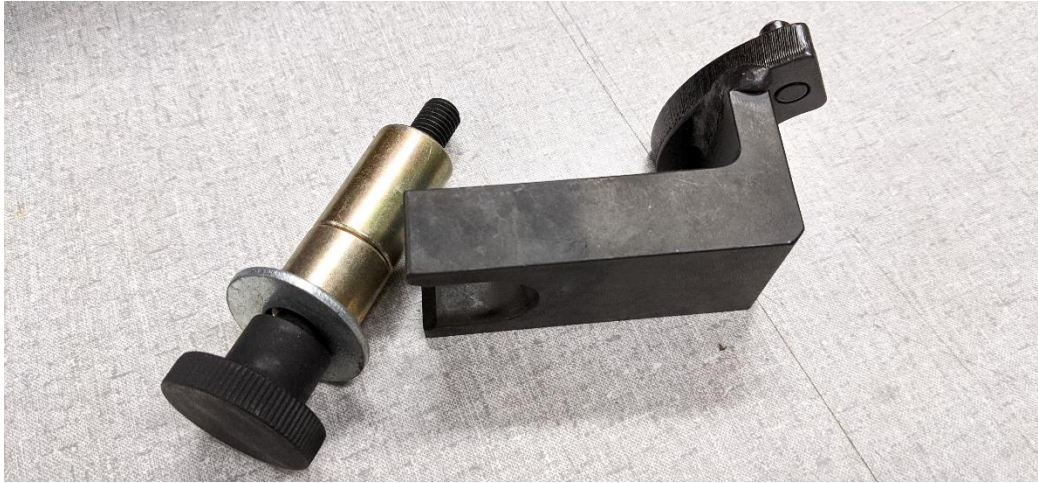


The goal is to push the bottom of the seal in far enough so that the top edge pops out. This sometimes doesn't pop out easily and may require careful usage of hand tools such as hooks and SMALL rounded pry bars. Be extremely careful not to gouge the sealing surface or to push any tools too far into the timing assembly.



The above sealing cap was finished off with hand tools. By leveraging the bottom in further with the hook, the top edge of the seal became exposed. Once exposed, a long flathead screwdriver and hammer were used to tap downwards on the exposed edge of the seal. This allowed enough rotation to then get the hook in the top (pictured above). Once the top is out, the seal pulls right out.

13. With the sealing cap removed, you can now use the additional pieces of the specialty tool kit to lock the timing gear in place. The same M10x78L bolt will thread into the upper tensioner hole with spacers installed:



The timing gear can be locked in various positions, but the position pictured below is the most secure. You may need to rotate the engine to get in the proper location to lock the timing gear. To do this, rotate the engine clockwise using a 22mm socket on the crank pulley.

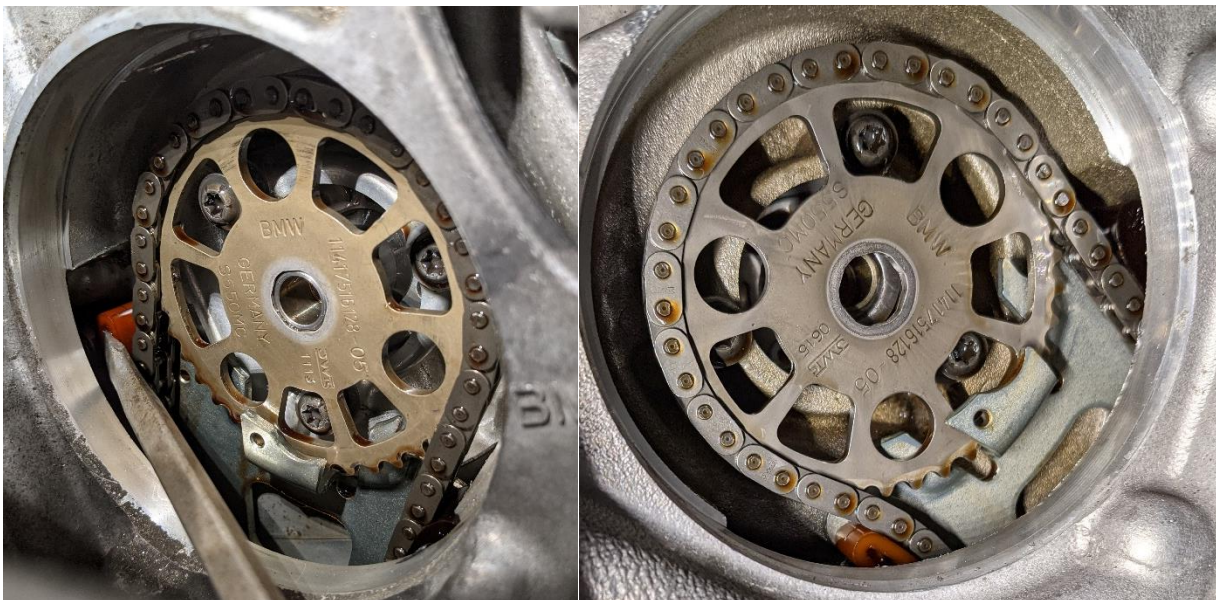


Once the tool is properly locked into the timing gear, use a T55 socket to crack loose the center bolt. Once it is cracked loose, do not remove the bolt. Instead, put it on finger tight and remove the locking tool.

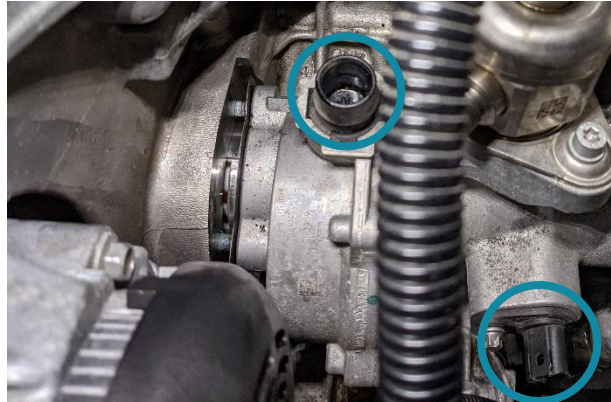
14. At this point, refer to the separate N55 HPFP instructions to remove the HPFP from the vacuum pump entirely.
15. Now that the HPFP is removed from the vacuum pump, use a 22mm socket on the crank pulley to rotate the engine clockwise until the 3x T30 bolts behind the timing gear line up with the three circular holes. Once these are lined up, use a T30 socket to loosen these bolts all the way. Once loose, remove the center T55 bolt as well:



16. Now using a flat head screwdriver, very carefully depress the timing chain tensioner (pictured on the left below). Hold the screwdriver in place and then slide the timing gear off the tip of the Vacuum pump shaft. Once the gear is off the shaft, release the screwdriver and allow the gear to rest as pictured (right):

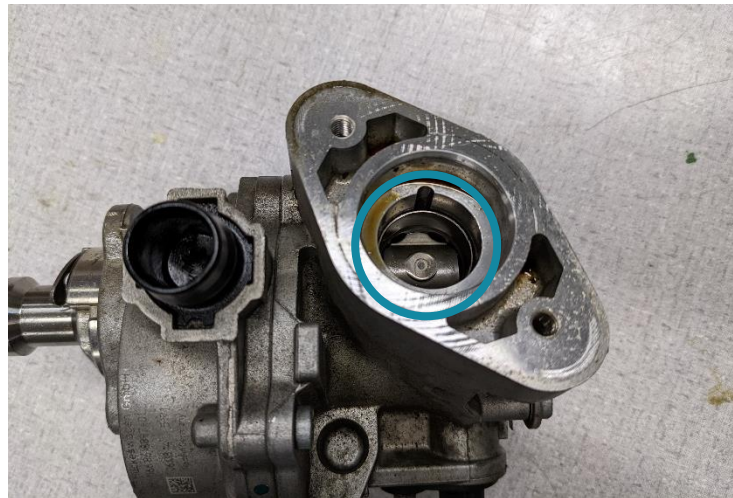


17. The vacuum pump assembly is nearly ready for removal. Make sure to disconnect the vacuum hose (squeeze the clip in on both sides while pulling up) and the HPFP cam sensor connection. The entire assembly can now slide out backwards for complete removal.

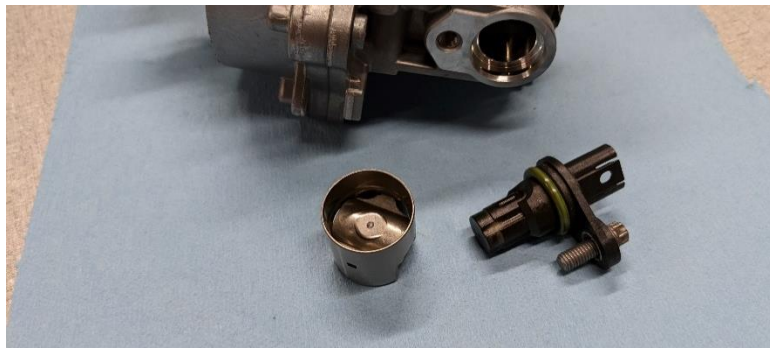


CAUTION: The vacuum pump assembly will be FULL of oil.

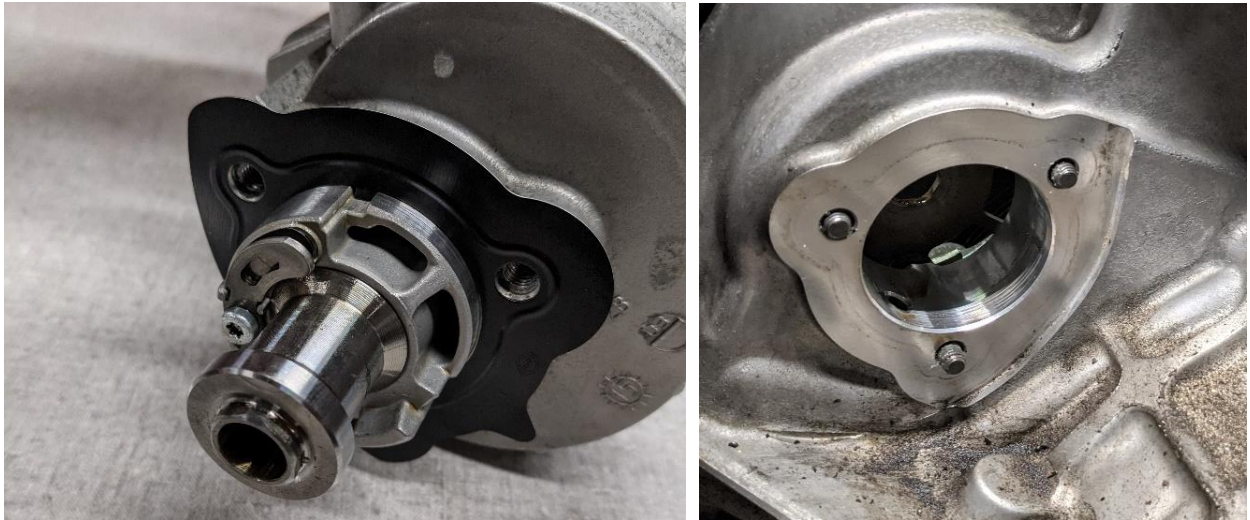
18. With the Vacuum pump now on a bench, remove the cam sensor (E8 bolt) and the cam follower. The cam follower simply slides vertically out of the HPFP mounting location.



19. Now transfer the cam follower and cam sensor (with O-ring seal) on to the Dorch Engineering supplied vacuum pump assembly. Make sure the follower is oiled when it is dropped into the new assembly.



20. Once the vacuum pump assembly is ready for reinstallation, be sure to install the supplied gasket on the front of the assembly. Be sure to also clean up the gasket area on the engine block.



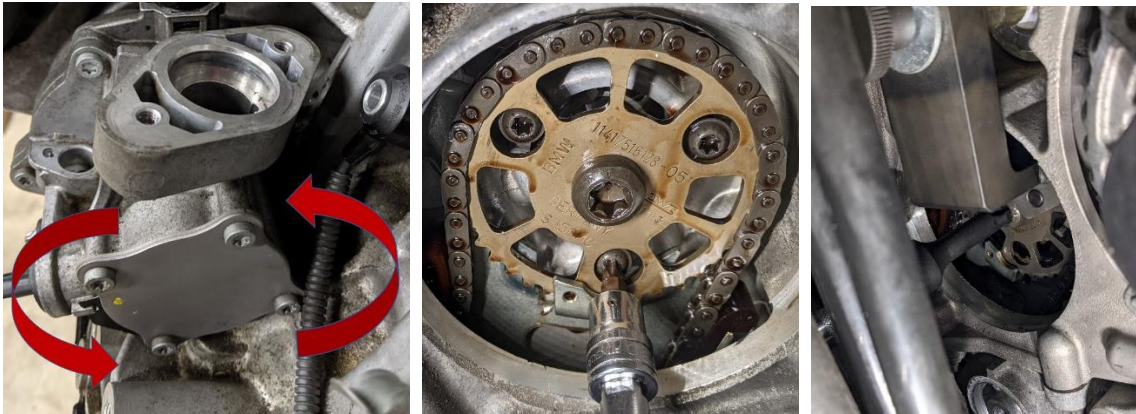
21. The Dorch Engineering vacuum pump assembly can now be installed in the block. Once it is seated in place, the timing gear needs to be placed back on the front of the shaft (reverse process of Step 16). This will require carefully using a screwdriver (again) to hold back the timing chain tensioner while the lining up the gear onto the front of the shaft.



22. Once the gear is back in place, hand-thread the T55 bolt to keep the gear in place. Be sure to clock the vacuum pump assembly outward within its bolt holes. This clocking reference is pictured below (left) and it's important for maximum HPFP to block clearance.

Now tighten the 3x T30 bolts to secure the vacuum pump assembly. This may require realignment via turning the engine over (clockwise) via a 22mm socket on the crank bolt.

Vacuum Pump to Block Tightening Torque (T30 Bolts): 10nm

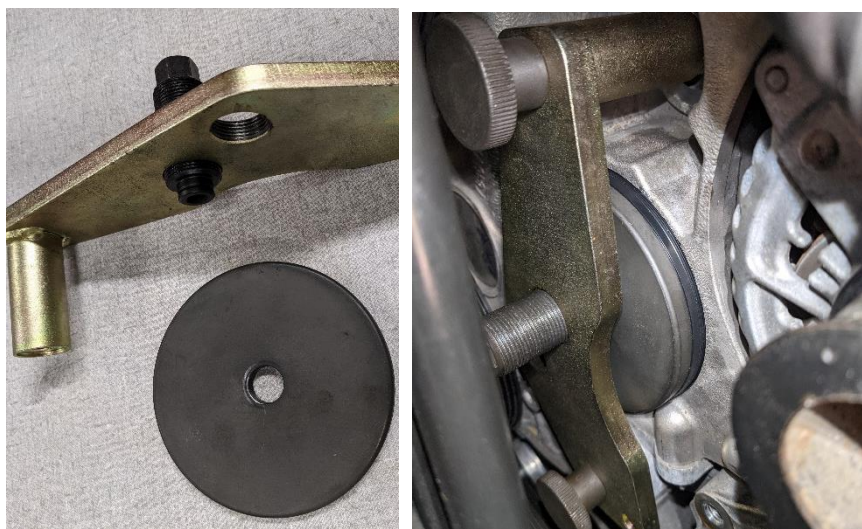


23. Now, reinstall the timing gear lock tool and tighten the center T55 bolt to the final torque.

Timing Gear to Vacuum Pump Tightening Torque (T55 Bolt): 66nm

24. Now install the supplied sealing cap using the sealing cap installation tool. This time you will be using the other shape threaded stud in the centered hole (pictured below left) and also the other disc (with the centered hole).

Install the tool with the thumb screws in the same fashion as step 11. Except this time, fit the threaded stud into the corresponding hole in the center of the disc. As you tighten the threaded stud (17mm socket), the stud will be locked into the disc and it will push the sealing cap in perfectly straight. Tighten it slowly until the sealing cap is installed flush and then remove the tool. **MAKE SURE THE THUMB SCREWS ARE BOTTOMED OUT BEFORE PRESSING IN THE NEW SEAL!**



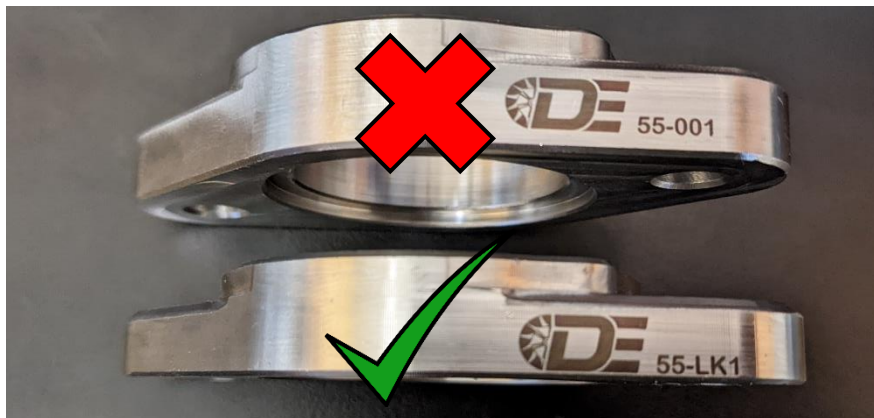
25. Everything will now reinstall very straight-forward in reverse order. Please take note of the following **TORQUE SPECIFICATIONS** for reassembly:

- Belt Tensioner to Block (Long T50 Bolt) **Tightening Torque: 38nm**
- Upper Idler Pulley to Block (T50 Bolt) **Tightening Torque: 56nm**
- Lower Idler Pulley (T50 Bolt) **Tightening Torque: 56nm**

At this point your Dorch N55 Lift Kit is fully installed and it's time to wrap up this project by installing your Dorch HPFP on to the lift kit. For the rest of the steps for this install, please refer to the standard Dorch N55 HPFP Installation Manual here: <https://dorchengineering.com/technical-resources/>

Dorch OG HPFP ONLY:

When installing your Dorch OG HPFP onto your N55LK, you can ONLY use our N55LK-specific mounting flange. This flange is labeled "55-LK1", your standard Dorch OG mounting flange "55-001" is NOT COMPATIBLE!



For any other installation related questions please contact our support team at: info@dorchengineering.com