



**TOYOTA HILUX 05 – 15**

**V6 4.0 LITER – 5.7PSI**

**INTERCOOLED**

**270 - 320 ENGINE KW**

Supercharger system install instructions for DO IT YOURSELF

(We don't know your abilities, your choice to DIY or have it professionally fitted)

Congratulations on the purchase of a Raptor Supercharger system for your Hilux V6. The system will give you years of enjoyment and increased performance providing you pay attention to details while installing the system and employ a good servicing standard. Abuse of your product will shorten its working life and the life of your vehicle.

### **SAFETY INFORMATION**

- REMOVE THE KEY FROM THE IGNITION OF THE CAR –
- DISCONNECT BATTERY
- DO NOT SMOKE NEAR THE CAR.
- NO NAKED FLAMES OR OTHER IGNITION SOURCES.
- PRE-READ ALL INSTRUCTIONS BEFORE STARTING
- WEAR SUITABLE PPE FOR THIS TASK i.e. GLOVES, EYE PROTECTION
- ASSESS ANY OTHER POTENTIAL DANGERS AT YOU FITTING SITE BEFORE YOU BEGIN THE INSTALLATION - PUT PROTECTIVE MEASURES IN PLACE
- DO NOT DRINK ALCOHOL DURING THIS TASK
- ALLOW 5-9 HOURS ON AVERAGE FOR FULL KIT INSTALL – IT'S NOT A RACE. ACCURACY/ATTENTION TO DETAIL IS all that is important
- Fit a NEW FUEL FILTER before installing the supercharger kit (if vehicle is not new)
- You WILL **dyo check the vehicle for correct air fuel ratio before using at full power on road**

Recommended actions: Fit a new fuel filter the vehicle BEFORE you fit the supercharger kit, afterwards may be too late! Engine damage could occur from insufficient fuel flow. Genuine part number 2330031120

Service the rear differential with high specification 85/140 gear oil, the factory oil is too low a grade and if oil is not replaced the vehicle may suffer rear differential failure after a period as short as 12 months, such is the additional torque this supercharger kit can develop.

Basic specifications:

Intercooler Water system capacity – approx 4.0 liters. Use a corrosion inhibitor in the coolant mix and if in a cold climate then add antifreeze also. USE ONLY GREEN colour corrosion inhibitors.

If you are installing a premium system and replacing fuel injectors – first thoroughly pressure clean the entire engine, especially around dipstick tube base and where possible around fuel injectors. Then blow dry with compressed air and run engine, make sure it runs well before installation of SC.

- ➡ The very first job is to install the piggyback ECU. You will find the ECU behind the glove box lid, this is easily removed by first opening the lid a bit, then pull up to disconnect hinges followed by a twist to free the top of the lid.

Wiring diagram

TO BE INSERTED

- ➡ Your next task is to connect the vacuum fitting on the back of the piggyback (visible in image above) to the vacuum source on the engine. This will mean passing the line through the fire wall. This line must be kept as short as possible for best engine response. The image below shows where the line will pass through the firewall on passenger side. Simply cut the tip off the rubber tit, lubricate the vacuum hose with silicon lubricant and slide hose through and connect to piggy back. You can also see the Tee installed to provide vacuum to the BOV on intercooler



- ➡ Connection to the vacuum source on the engine. See the image below, you will find the connection parts in your kit which will look similar, cut a small section out of the large hose and install the tee section.



NOW START THE ENGINE AND MAKE SURE IT RUNS AT IDLE  
IF YOU PASS THIS TEST CONTINUE ON WITH INSTALLING THE KIT

- ➔ Removal of existing air filter and air flow meter assembly. There is typically no engine cover on this model. One could be sourced from a 120 series Prado or GGN series Hilux V6 if you would like it to look “finished”

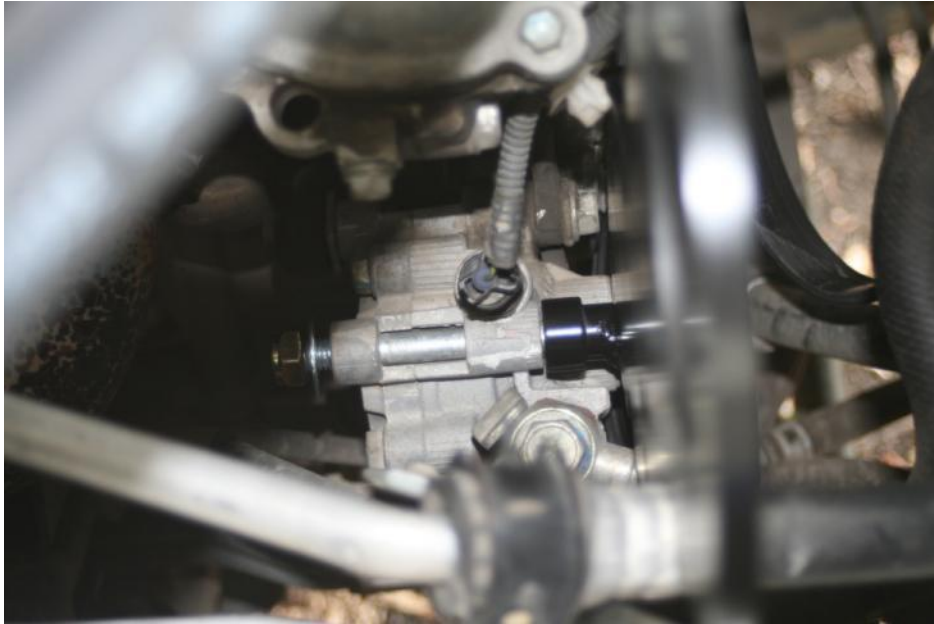


Remove the air filter box, the tube to the inner guard area on the drivers side, then remove the air flow meter from the air filter box assembly. Next, unbolt the entire air filter assembly, disconnect the hose from the fuel pressure regulator which is typically attached at the back, disconnect the airflow meter wiring and any wiring mounts.

Remove fan belt from engine – 14mm socket and ratchet is needed, fit socket to the idler/automatic tensioner (see belt diagram below) and attempt to rotate the retaining bolt anticlockwise. This will take the tension from the belt and allow it to be slipped off an idler pulley for final removal. Belt has to come off over the fan before it will be entirely free of the engine – your new longer belt will be fitted in reverse order, starting by going over the engine fan first.

- Fitment of supercharger to engine
- Remove engine oil dipstick – to be refitted later

Take the supercharger bracket and the single long bolt with nyloc nut, slide the bracket down behind the power steering pump pulley and install the long bolt into the mount on the top of the PS pump. See following picture, the bracket has a welded on spacer on the back of it. Fit bolt with nut and washer but do not tighten it just yet, just tighten enough so you can still move the bracket up and down if needed when fitting the alloy stay bracket to cylinder head.



Now fit the alloy bracket with its 2 bolts into the cylinder head and 1 button head through the bracket as shown. FOR GEN8 the upper button head goes through the bracket as shown, while the lower button head is much longer and passes through the bottom idler pulley, the bracket and finally into the alloy bracket. The upper idler has its own separate bolt.

Tighten the bolts in the following order

1. Tighten button heads with allen key
2. Tighten the bolt through power steering pump, firm but not too tight otherwise the mount on the power steering pump can be severely damaged. You access this bolt through the slots in the power steering pulley.
3. Tighten the 2 x 8mm bolts into the cylinder head, nice and firm but not overly tight.
4. The entire bracket should now be securely fastened to the engine ready for the supercharger and other parts to be fitted.



- ➡ Fit the idlers to the bracket and tighten the button heads as tight as you can possibly do them. The image below shows the idlers being fitted to their respective positions. The upper idler should be fitted to the hole nearest to the middle of the plate, do not use the upper most hole. The 2 holes are approx 20mm apart.

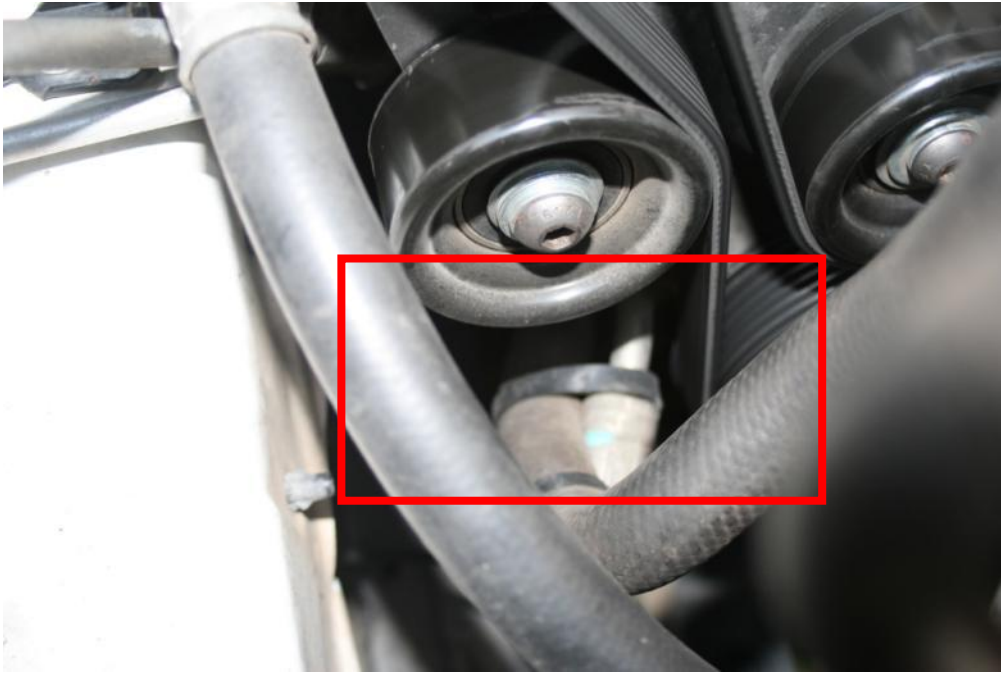


- Now refit the dipstick – modify as shown in this picture, a wire mount tab may need to be cut off. It is assumed that the GEN8 Hilux has same dipstick tube as Prado 120 V6, hence picture below. This is different to Hilux GGN V6 vehicles for which there is another bracket and another modification.



- To the bottom left of the power steering pulley you can see a large zip tie, this is holding the power steering hose away from where the engine belt runs, IT IS CRITICAL that this hose is tied securely out of the way, double check and make certain it can never come free and rub on belt. Use as many of the provided HEAVY DUTY zip ties as you need to have PERFECT peace of mind, if this hose rubs on the belt you will lose your power steering

assistance. For GEN8, you will have to see what precisely runs where and make sure belt does not rub any of the hoses or PS pump parts.



➤ Fitting the supercharger to the bracket

Take the 8 stainless countersunk screws and fit the supercharger so the outlet is facing near horizontal as shown in the image below, tighten screws firmly and never use any locking compounds at all, if overtightened the stainless screws will be damaged. If screws are too tight you may not be able to remove them at a later time.



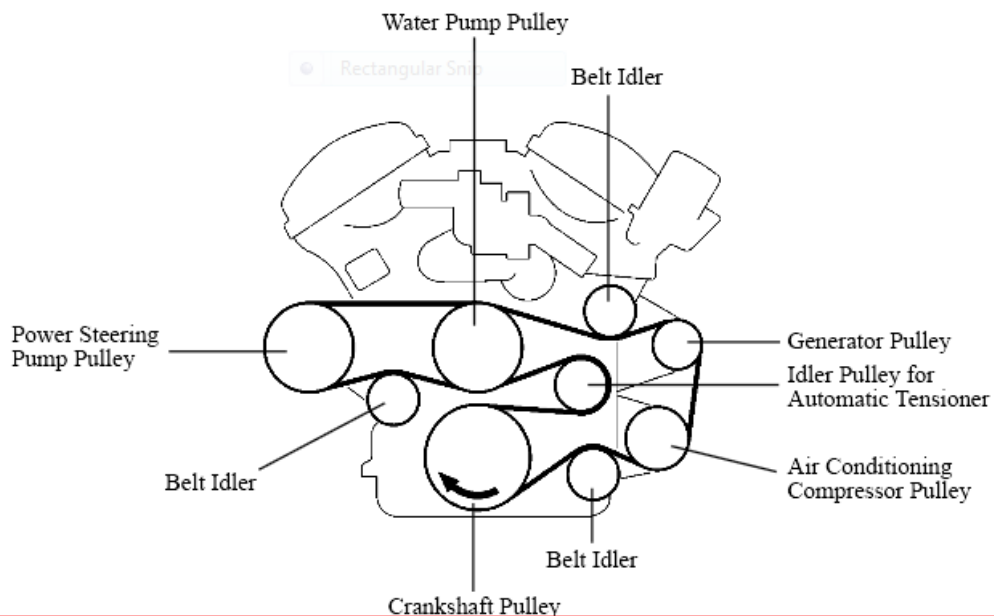


- ➔ Now the 7PK2865 drive belt can be fitted, take plenty of time to double check that belt is fitted correctly, you only get one chance to get it right, getting it wrong will result in immediate ruination of the belt, no replacement will be provided free of charge if you get it wrong. Follow the belt diagram below, but deviate between the 2 idlers out to the charger. You will need a 14mm socket to operate the autotensioner pulley. Auto tensioners are extremely dangerous – make sure socket is properly engaged and keep fingers out of pinch areas when releasing the auto tensioner.

## ○ SERPENTINE BELT DRIVE SYSTEM

### 1. General

- ▶ Accessory components are driven by a serpentine belt consisting of a single V-ribbed belt. It reduces the overall engine length, weight and number of engine parts.
- ▶ An automatic tensioner eliminates the need for tension adjustment.



- ➔ Now refit the engine oil dipstick and lock edge of its little bracket under the pinch bolt in the alloy bracket you bolted to the engine cylinder head. (FOR GENERATION 8 HILUX you may need to snip a small part away from the dip stick – same as for Prado 120)





- ➔ **INSTALL INTERCOOLER and AIR FLOW METER.** The intercooler is supported one end by the AIR FLOW METER and the other end by a long metal bracket, this bracket bolts to intercooler as shown below and connects to another 8mm threaded hole on the cylinder head, see next image. Always fit the silicon hoses with the RAPTOR LOGO's facing up, this is because the hoses have been cut to fit correctly and the logos facing up ensures you have them the correct way  
MAF position shown below.



## Intercooler stay bracket - example



- ➔ AIR FLOW METER ASSEMBLY – is installed with the internal honeycomb air straightener facing towards the intercooler, a 90 degree pieces attached to the throttle body, then the MAF inserts into the other end and using the 2.5" to 3" silicone adaptor fit to the intercooler outlet. The airflow meter sensor is simply unscrewed from its mount in the original airbox and reinstalled using the supplied screws into the new MAF body. Reconnect wiring/plug to air flow meter. Tighten all clamps. MAF wiring may need to be extended or rerouted for GEN8 Hilux

➡ Fitting the AIR FLOW METER

First clean the airflow meter with some **electronics cleaning fluid and blow dry with compressed air**. This is critical so that the tune supplied will work to its best on your vehicle. Fit MAF to MAF body before fitting assembly to vehicle

➡ Fitting the intercooler hot side air hosing. You have been supplied with a single 2.5" 90 degree bend to connect between the supercharger and the intercooler. Logo up



➡ Engine breather. In the image above you can see the engine breather hose directly below the intercooler towards the front, disconnect the hose entirely and reconnect using the short 16mm hose supplied in your kit. It connects from the breather outlet on cylinder head directly to the 16mm breather connection on the air delivery pipe into the supercharger.

➡ BOV vacuum hose connection – see section on ECU installation about where to Tee of for the BOV actuator hose. See the picture below for the LOCATION of the BOSCH BOV. A short piece of 25mm hose with 2 hose clamps has been supplied to mount the valve to the intercooler 25mm outlet.



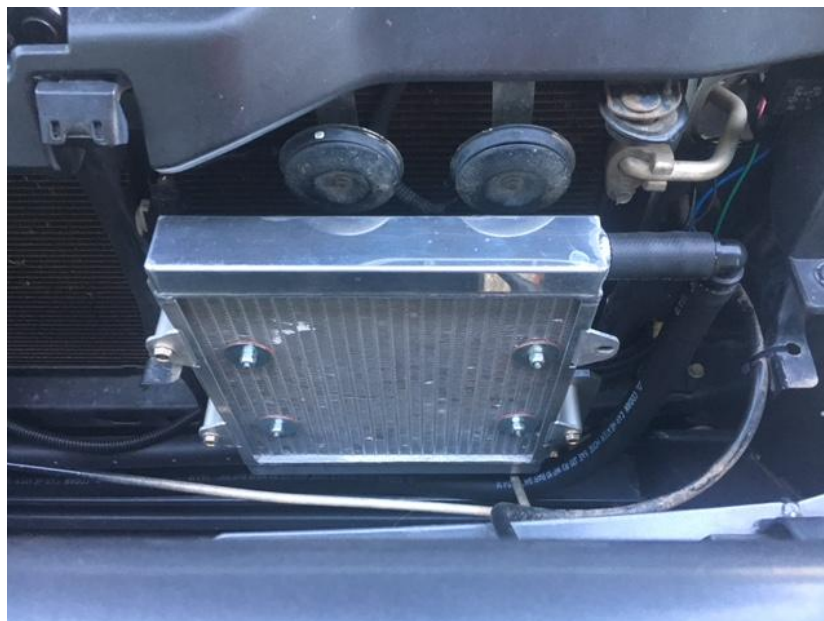
- ➡ Air filter assembly – You have been supplied with a polished alloy pipe, it has a slip on ORING sealed connection and a small support arm that attaches to the supercharger itself. When installing the air to the charger use 1 washer only and gently tighten the 3/16" screw, don't forget to tighten the 1/4" screws in the arm connection to the air intake pipe.



- ➡ Next – fit your airfilter to the intake pipe – tighten the clamp and DO NOT OIL THIS FILTER EVER. Next locate your orange foam filter, this is to be oiled with foam filter oil before fitting, then simply slip it over the entire filter. This is critical to be done correctly. This will

stop ALL dust in any conditions but will NOT filter out water in wet conditions such as water crossings

- ➡ Intercooler water system and pump – Remove the grill. Install pump in position as shown. Install radiator as shown in pictures. Fan at the back of the I/C radiator if possible. Wire so fan is on when key is turned to “ON”



- ➡ Pump wiring – wiring is provided, we suggest a qualified auto electrician connect the pump and fan to a key switched 12V power supply. Power required for both items is approx 10 amps.

➡ Fit reservoir anywhere convenient at a height near to the height of the intercooler mounted on the engine, it does not necessarily need to be fitted onto the intercooler as shown in the example pictures

➡ Fitting the intercooler hosing and connections to the water cooled supercharger

The longest 19mm (2100mm) hose connects from the REAR of the intercooler to the top fitting on radiator. This is the hot water return

The shortest 19mm (1800mm) connects from FRONT of intercooler to the pump discharge. This is cold water supply to the intercooler.

The pump suction will need a small length of 19mm hose cut to connect from bottom of radiator to pump suction/intake. This is a cold water line.

The hoses will pass through a hole in the radiator panel that is covered with black foam from the factory.

Hose clamps are not normally used, simply push the hose onto the fittings once you have cut the hoses to a NEAT length

The short 3/8" hose, one connects from brass fitting on intercooler to fitting on topside of supercharger transmission, cold supply to supercharger transmission.



The longer 3/8" hose connects from fitting on lower side of RESERVIOR to poly fitting at the electric pump intake.

There should also be a hose 3/8" from the other fitting on the supercharger transmission which returns to the TOP fitting on the water reservoir. Cut hose to fit.

Image below shows the water connections on the supercharger





#### ADDITIONAL INFORMATION:

##### The piggyback ECU tune

It has been known that the scanning machines of Aust Post can erase the ECU program, this will cause vehicle to run extremely poorly and/or not want to start. Raptor can email the piggyback software and the tune so you can reinstall the tune file and proceed with completing your supercharger installation. The connection cables have been supplied as part of your system.

##### Rear Differential

The oil grade should be 85/140 which is compatible with LSD if LSD is fitted.

##### ABS Module (some SR5 models)

If your vehicle has an ABS module in the vicinity of the brake master cylinder you MAY need to unbolt it and move it back sufficiently to clear the supercharger intake pipe. Not all models of Hilux need the ABS module moved as there are 2 locations Toyota employed. If you need to move it, simply place it back further drill the 3 holes into the inner guard and bolt through. The distance to move back can be up to 75mm

##### SNORKLE

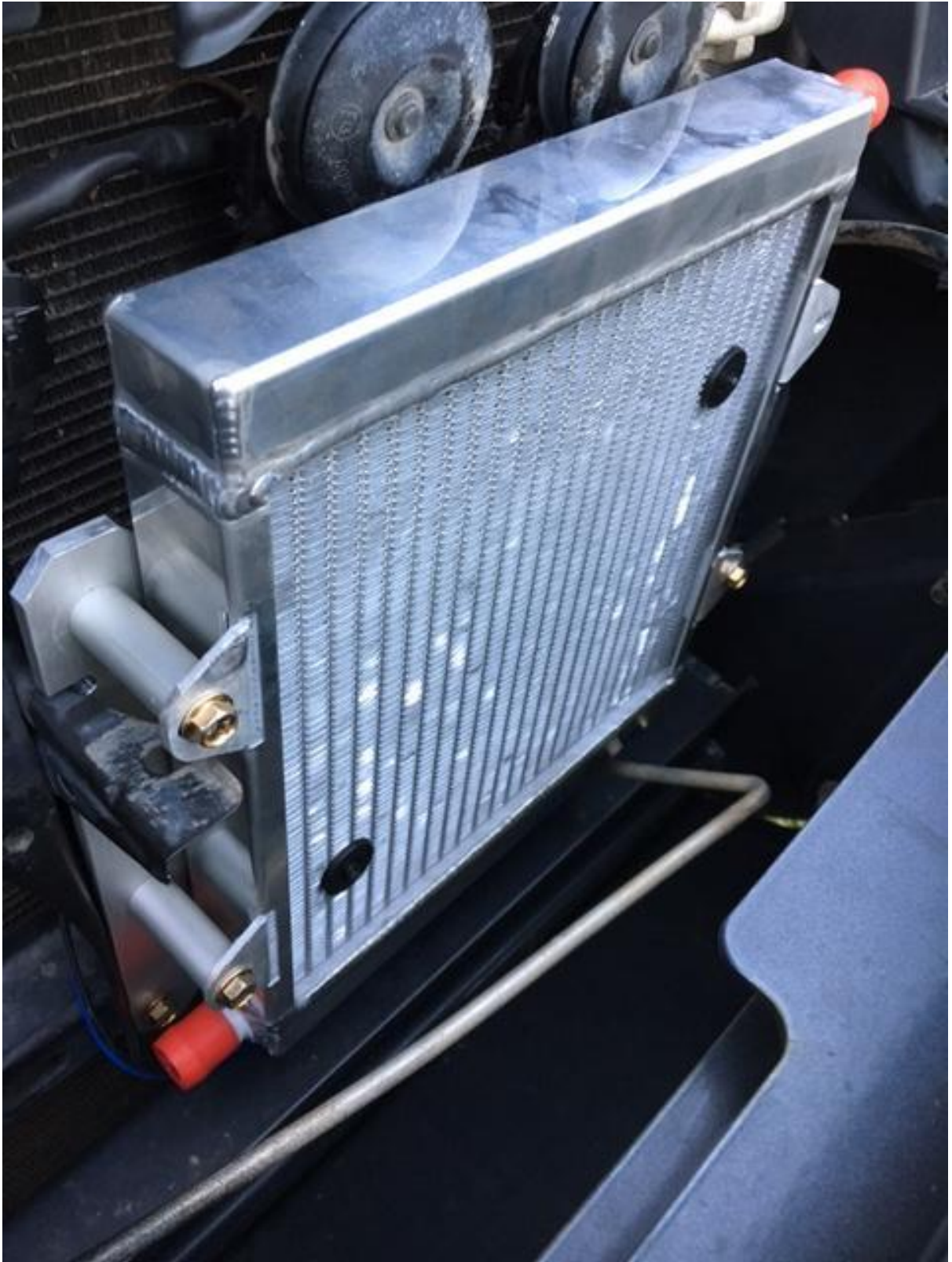
The new supercharger kit for Hilux has provision for a snorkel compatible airbox, this is manufactured as a direct fit by PSICO.

THE FULLY INSTALLED SYSTEM (for Prado 120 V6 ) – adaption to GEN 8 Hilux











Before fitting the fan, check its rotation. Fan should be mounted on the back of the radiator with fan fitted as a PULLER configuration. There are instructions with the fan on how to reverse its rotation and to reverse the fan blade itself







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Fitment of kits and systems

No liability whatsoever (including liability in negligence) is accepted by Raptor Superchargers for the fitment of incorrect tuning or incorrect fitment of kits and systems. The onus is clearly with the fitter to ensure the kit supplied is correct for the particular system. Any damage to parts or consequential damage or cost resulting from the fitment of the incorrect parts or incorrect fitment of parts is totally the responsibility of the fitter

Fuel systems

All Raptor Supercharger systems are fashioned to give adequate fuel enrichment on unmodified (standard engine) vehicles. If vehicle engine is modified ie extractors, air filter pod, fuel pumps, manifolds, etc) most kits will require additional enrichment not provided with kit/s. Raptor superchargers is in no way liable for engine damage arising due to incorrect tuning, un-maintained fuel systems and the like. A new fuel filter must always be fitted at the time the supercharger kit is fitted.

**YOU MUST DYNO TEST/TUNE THE VEHICLE AND CHECK IT IS SAFE FOR OPERATION – THE FINAL TEST RESULTS must be forwarded to Raptor SC by email to maintain your system warranty.**  
[raptorsc@westnet.com.au](mailto:raptorsc@westnet.com.au)

Insurance

Take care to inform your vehicle insurer of changes you are making/have made so that you retain your policy, also enquire with your state transport department regarding engineering certificates/mod plates that they may require for lawful motor vehicle operation. Companies like Shannon's insurance insure modified vehicles.

Lawful operation

It is your responsibility to make certain that your vehicle complies with the rules, regulations of your particular country, state or town.