



Raptor Superchargers

Installation instructions



Commodore VN - VP Stage 1 SC kit install instructions

Congratulations on your purchase of a performance enhancing Raptor supercharger kit or kit parts for your Commodore. The following will assist you with installing the components you have purchased. Always wear personal protection equipment whilst working, work safely and observe all environmental requirements.

Disclaimer:

You should not expressly rely on this information without making your own enquiry.

RAPTOR HELPLINE: 0409 897 081 8:00am - 5:30pm MON - FRI

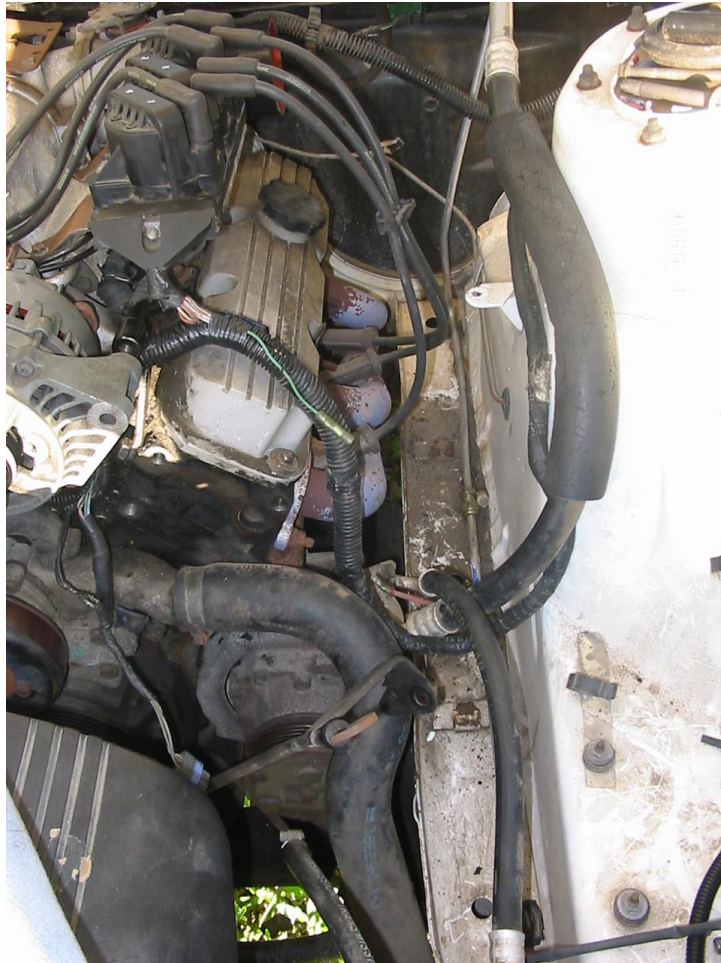
Some tools needed for SC kit only, other tools will be required to fit injectors etc:

- 1) 18mm socket and breaker bar
- 2) Various sizes of sockets
- 3) Flat style screw driver
- 4) 6mm Allen key
- 5) 7mm socket ¼ drive
- 6) Black electrical tape
- 7) Soldering Iron
- 8) Engine coolant

Install steps

1. Remove the original drive belt
2. Remove air filter ducting and air filter box assembly
3. Remove coil pack bracket and then remove coil pack from bracket. DO NOT disconnect the spark plug leads, but do remove the wide 13 wire plug with 7mm socket head.
4. Remove engine lifting bracket from front of left hand cylinder head, this bracket normally mounts on the first 2 exhaust manifold bolts. Remove and store.

Your engine should now look like this except no belt should be sitting on the pulleys and air box should be gone. DISREGARD coil position in this image, this is a later step.



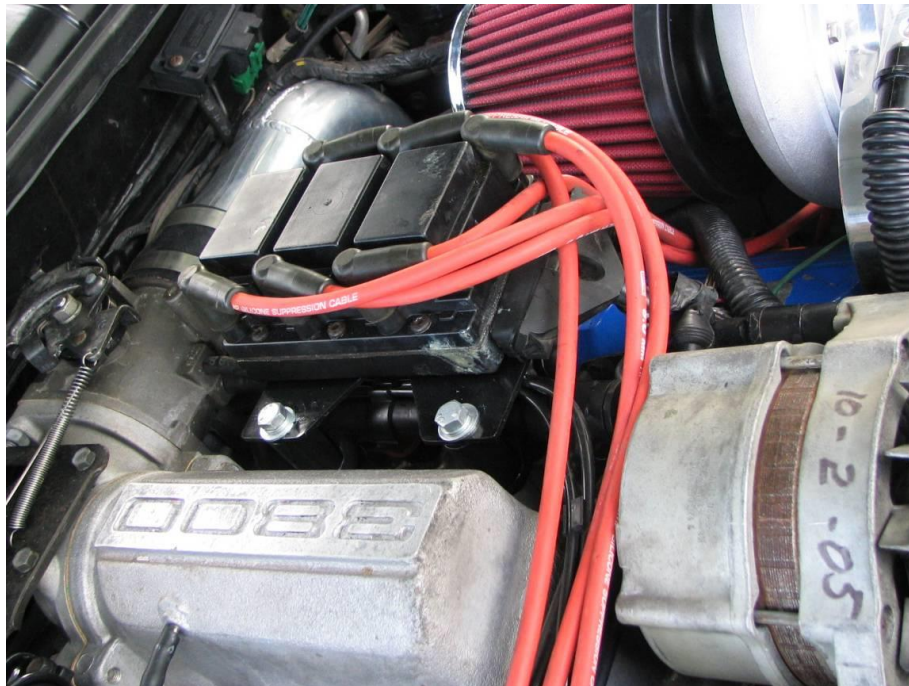
5. Next job is to fit the six new iridium 1.0mm gap sparkplugs and refit the spark leads without mixing up their order. There are 6 sparkplugs supplied.



6. Next job, fit the six new injectors 36lb/hr rated. Thoroughly clean around all injectors prior to removing them. Remove the 2 bolts holding down each injector fuel rail, then remove sliding clips holding each injector and replace one at a time taking great care to prevent entry of dirt, dust or other foreign materials. Use 2 stroke oil to lube the O-RINGS on the injectors before fitting them to the fuel rail to prevent damage to the O-RING's. When installing the retaining clips at top of each injector use the upper most slots in each injector, this is very important to pay attention to.

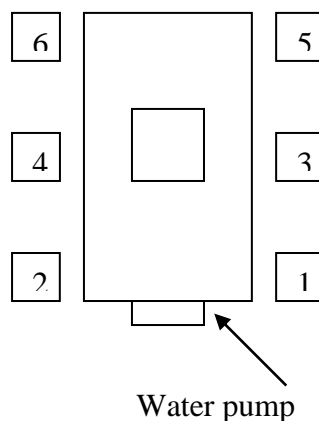
7. Next job is to mount the coil pack with the 13 pin plug facing the radiator. You have been supplied 2 x 60mm length bolts and spacers together with a retangle plate with 5 holes in it, 2 to mount with and 3 in triangle pattern are for coil mounting.

VN S1 SHOWN



Finished coil monting job should look like this. You will need to adjust the leads to attain a similar finished look. Typically the leads fitted to your engine will be fine for length. If you mix up the ignition leads for any reason then you can refer to the engine cylinder layout show here

Below is cylinder layout numbering



8. REROUTING THE WIRING LOOM, this is a very important step. You will find that the coil plug is still close to where you disconnected it, the loom must now be adjusted until the plug will insert directly into the coil pack. Unclip loom from inside of pax side inner guard until it can be placed behind the pax side spring tower, now disconnect the 4 wire crank angle sensor plug and then slightly lift alternator so you can access the loom from which the crank angle sensor wiring originates. Now continue to unclip loom and adjust carefully until coil plug can be reconnected.

Picture below clearly shows how loom will look BEFORE you start work on it, see it coming around the front of the spring tower.



This picture shows how loom will look after you have worked on it, you will notice the loom has disappeared from front side of spring tower and now rests behind it. It also lays over the top of the tappet cover behind the supercharger (which you should not have fitted yet). IF the car has had the AC compressor overhauled at some time and the mechanic has put the loom on the wrong side of the hoses then the only option will be to de-gass the system, remove offending hose temporarily, shift loom then refit hose to AC compressor. IT IS POSSIBLE TO REROUTE THE LOOM EVEN IF THE WIRING IS ON WRONG SIDE OF COMPRESSOR HOSE, try this before degassing system.

Once the coil plug has been reconnected satisfactorily it is time to examine the refitting of the crank angle sensor wires. NORMALLY these wires will reach again and be able to be plugged in, 98% of cases. If they dont then the 4 wires may need lengthening by up to 50mm.

VR SHOWN



9. TIME TO FIT THE SUPERCHARGER! You will find the main mounting bracket is already fitted to the supercharger. If it isn't then position charger onto bracket as shown in picture at point 8, this must be done prior to fitting the bracket to engine.

The spacers x 3 go between the cylinder head and the SC bracket, insert the bolts from radiator side of SC bracket and fasten assembly to cylinder head. Tighten bolts very securely. One bolt is countersunk, other two are standard bolts

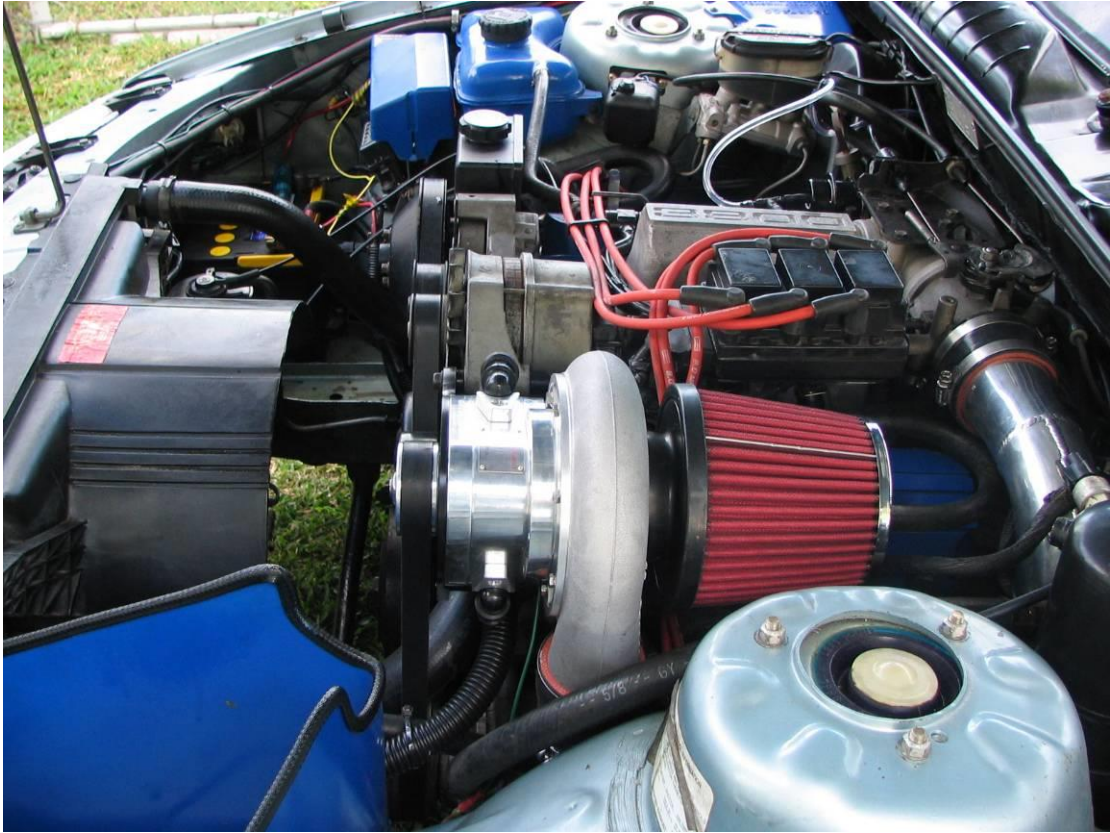
10. Now the SC is fitted you it is time to plumb it to the throttle body, you have been supplied with a aluminium piece with silicon fitted either end ready for installation. Item shown with out silicon fitted but with BOV fitted for plumb back, some kits will not be plumb back and will just vent to atmosphere.



Pipe shown fitted. In some instances the 90 degree rubber hose can be left off, especially if the kit is supplied with a filter mounted directly to supercharger unit. In this case the CBV valve will bypass to atmosphere. Tighten all clamps once the tubing has been properly fitted, adjust piping so it is closest to inner guard and furthest from manifold/extractors.

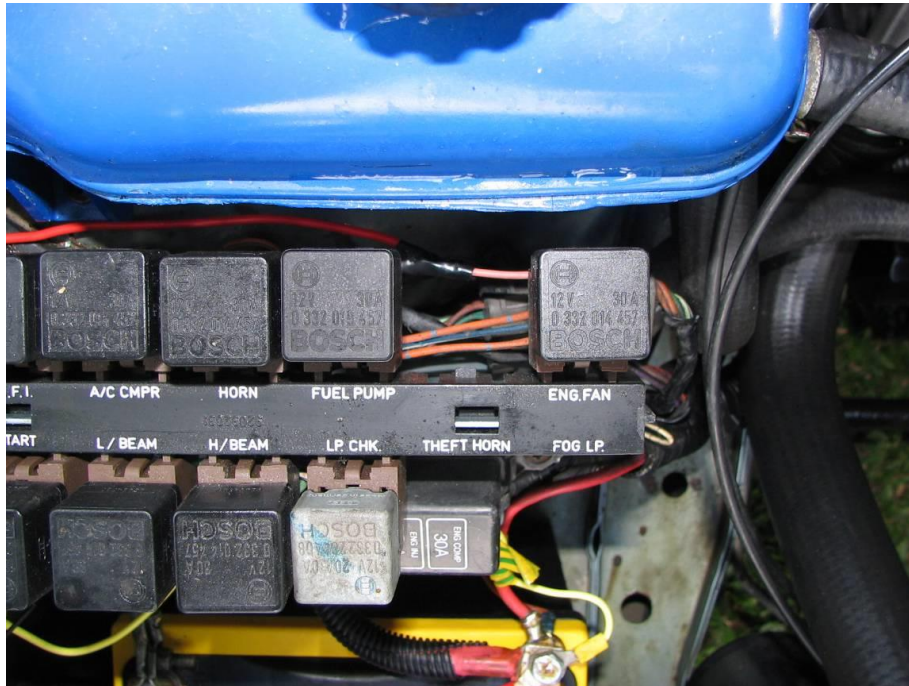
11. Now you need to find the length of vacuum hose supplied and connect the BOSCH BYPASS valve to a vacuum source. The vacuum source is on drivers side of manifold, you will find a small 3mm steel line exiting the manifold which will already have a vacuum hose running of to another location, Tee into this line with provided Tee. The line you are looking for goes from manifold to the fuel pressure regulator on end of drivers side of injector rail.
12. Next step is to fit air filter to supercharger intake, this is very straight forward, the air filter will be supplied no fitted but all you have to do is fit it to the alloy intake pipe. You will see that that on that intake pipe is a 1/2" outlet, this is for the engine breather hose connection. The engine breather hose connects to metal breather tube on

passenger side and then to tube on intake. A blanking plug is also supplied to block of the original breather tube connection under the throttle body.



13. SC COOLING Fan should face towards drivers side between bumper and radiator (must not be in the engine bay at all) and the convoluted hose can run back along chassis rail to the SC unit. Fit SC cooling system. Push the 19mm convoluted hose onto the upper air fitting on SC transmission. Then run hose along, down, under and back towards passenger side inner guard. Zip tie to the radiator hose and finally end up behind front bumper in area of number plate. Zip tie the fan unit to any suitable location behind number plate, be sure the push the convoluted hose into the hole of fan unit body approx 20mm.

14. Wiring is supplied in the kit to run from fan unit back to the fuse box. You will see the red wire which is soldered to the pink (with white trace) wire which is a key switched feed for the engine fan. Wiring for the fan unit, power should be key switched so anytime the key is turned to the ON position fan should be running.



Cooling fan system

This consists of a

1. Blue MOTOR CONTROLLER
2. A speed controller that plugs into the motor controller
3. Black and Red Power feed wires that plug into the motor controller
4. A mounting bracket and 4 x 3mm screws to mount fan to bracket
5. Air delivery hose with adaptor on one end to fit the fan unit
6. Fan itself, 2 stage variable speed centrifugal fan w/ 3phase AC motor



FAN Wiring guide

PIN NUMBERS ARE NOTED ON THE UNDERSIDE OF RELAY

There should be a note in this fitting guide as to where the fuse adaptor plugs in to your fuse box – this will give you your KEY ON power supply and signal wire to the relay (pin 86)

Your Relay needs an earth, so you run the PIN 85 wire to Earth (battery or body)

Your relay needs a Power feed direct from battery – battery direct to PIN 30 (red wire coming from relay)

Your RED fan power wire from blue fan controller connects to this pin (as the 2 pin female plug on the end) connects to PIN 87A (blue wire coming from relay)

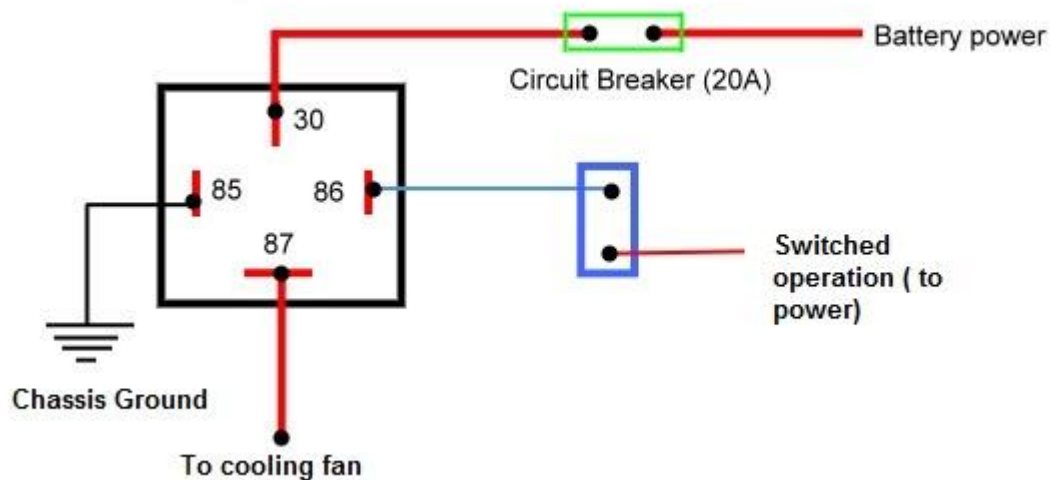
Your Black fan earth wire should ideally go to chassis or even back to the battery

Now you can plug that two wire female into the blue fan controller

Then you take the fan speed controller with its 3 wire plug (but is 5 pins wide if I recall) and plug it directly into the blue fan controller also, and insulate it and keep it nearby to fan controller – adjust it for 60% of maximum speed once its all going

Then, plug the motor and its wide connection plug directly into the blue fan controller as well

If you have all that completed correctly, your fan will start and run when the key is turned on

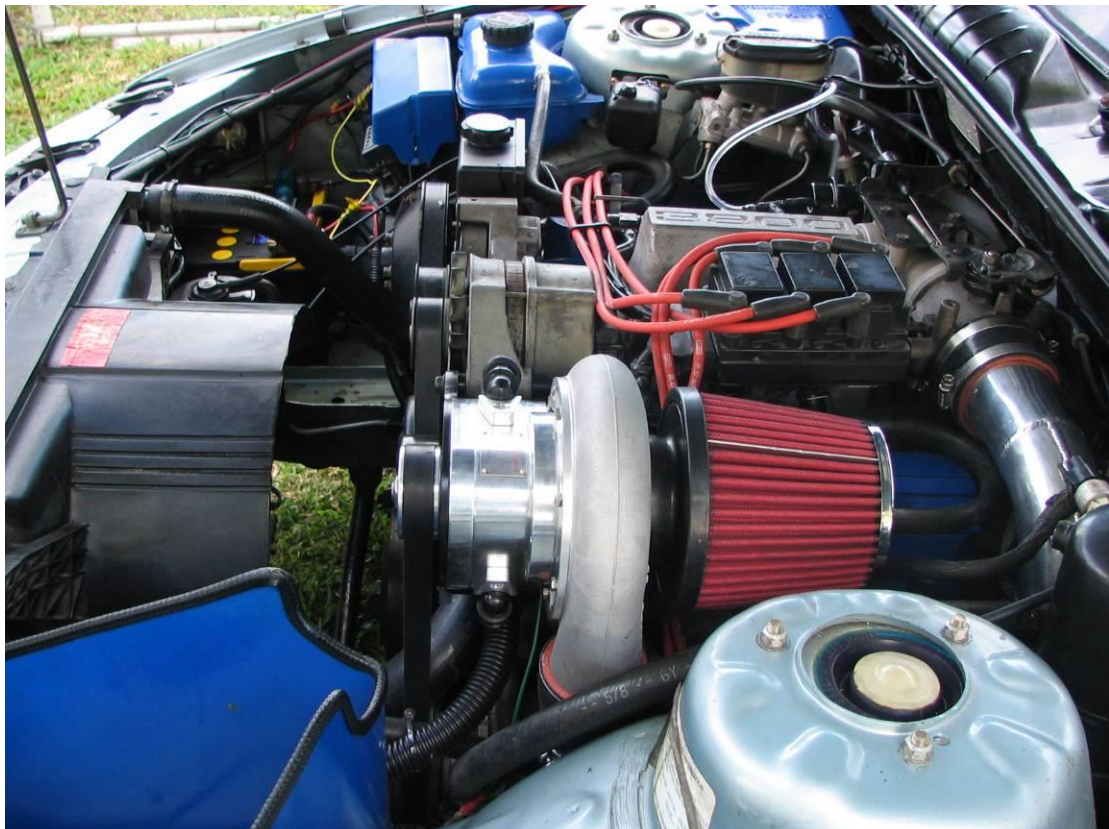


15. Fitting engine drive belt. See image for how belt should be run. There is a multiple of holes so that you can adjust idler for perfect belt tension, the idler is likely to be best in the middle hole.



16. DOUBLE CHECK that drive belt will NOT rub through lower radiator hose, you need a minimum of 12mm clearance.
17. At this point all the under the bonnet jobs should be completed. Continue until they are 😊.
18. Now, locate the new MEMCAL which has been carefully calibrated to give safe maximum power from your new kit. Locate the ECU inside of left hand side kick panel. Once you have the ECU out where you can work on it remove small cover plate which is held by just one screw. You will see the original MEMCAL right in front of your eyes. Carefully remove memcal and insert the memcal supplied with kit. Do not mix them up as they will look identical. Replace computer to original position and refit kick panel.
19. NOW TURN THE KEY TO ON SO DASH LIGHTS ARE ALL ON AND WAIT FOR 40 SECONDS BEFORE ATTEMPTING TO CRANK ENGINE, WAIT 60 IF IN DOUBT.
20. Now if everything has been doubly doubly checked then its time to start the engine, use NO throttle. It will take a bit of cranking before the electric fuel pump purges all the air from the fuel system and fuel pressure is back to normal. It's best to crank for 5 secs, and then stop for 5 more and so on until the engine fires. If no activity after 8 tries then something may well not be right

21. When engine starts be ready to stop it immediately, listen for any ominous (bad) sounds but if you have everything correct THEN there is likely to be no problems. Run engine for 1 minute then shut down, check for fuel leaks and that no stationary parts are being rubbed or touching moving/hot parts.
22. If everything checks out ok its time for you to begin the running in process, this consists of VERY easy driving for 20kms. **This is absolutely crucial so the supercharger will have a long and trouble free life. This initial 300km of use will allow the supercharger bearings to adjust their lubricant level and run at a significantly lower temperature than what they otherwise will.** Limit your max engine rpm to 3500 during this period and short run driving is best if it happens that way. The many cooling and heating cycles of short intermittent runs are ideal. This period also gives you the owner a chance to rectify any other issues before going for full power.
23. After you have covered the initial 300km we advise you to call us (0409 897 081) to discuss how vehicle is now performing, at this point if all is OK you will be ready to experience the FULL power of your vehicle modifications in the knowledge everything is correctly adjusted, fitted and run in.
24. Take plenty of care while you get a feel for what can happen at full throttle in the first few gears, your vehicle has a new personality!!



BELT routing

If you are confused about where the belt should run then compare with the following image for correct setup.



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 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.