

Installation instructions



**Holden Commodore VU - VY " ~290Kw+
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 7:00am - 8:30pm Mon – Sat

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

- 1) 15mm socket and breaker bar (to fit idler to loosen engine drive belt)
- 2) 13mm socket
- 3) Flat style screw driver
- 4) 6mm Allen key (to remove and refit idler pulley on supercharger bracket and 3 main bolts which hold bracket to cylinder head)
- 5) 7mm socket ¼ drive (to remove small bolt in centre of coil pack connector plug)
- 6) Black electrical tape
- 7) Also fit new O2 sensors
- 8) Knife to cut some hoses to correct length

Install steps

1. Remove the original drive belt
2. Remove idler (nearest coil pack) and also coil pack
3. Remove the idler mounting bracket
4. Remove air filter ducting and air filter assembly
5. Remove the air temp sensor from airbox assembly (circled in white)



See following picture for pieces that you should definitely have removed at this point. Air box should also be removed, take care to also remove air temp sensor from air box for reinstall into suction line to SC.



Your engine should now look like this except no belt should be sitting on the pulleys and air box should be gone. Ideally mark which spark lead goes to which coil pole before disconnecting the leads.



6. Now fit the supplied 6 fuel injectors, clean around all injectors prior to removal as DIRT accumulates around these areas and may cause engine damage if DIRT enters engine during injector install. Refer to your vehicles appropriate (Haynes) or other manual for correct procedure and bolt tensions (all bolts/fasteners). Use 2 stroke oil to lube the ORINGS on the injectors before fitting them to the fuel rail, this prevents damage to the O-RING's and makes the injectors fit in real sweet.
7. Fit the iridium spark plugs supplied with your supercharger kit, double check that plug gap is 1.1mm. These should be fitted even if you already HAVE iridium plugs since

these have a different gap and heat range specification. Bending the electrodes to reduce GAP on Iridium plugs is NOT recommended by the plug manufacturer.

8. Next image/s shows the coil correctly mounted for VT model, there are two ways in which the coil can be mounted; choose the position which suits your setup the best. In one way the coil poles are high with wide coil plug facing radiator and on the other location they are low with wide coil plug facing throttle body. Either location is satisfactory. The following images depict both styles of installation.
9. Fit coil to coil mount plate, the wide plug with 7mm fastener on it will face the engine radiator and the bracket will mount to upper side of coil. Coil spark poles will face pax side mudguard. Use the supplied bolts. Then replace front most screw in plenum cover with the longer screw/s you will find already inserted into coil mount, then also replace next plenum screw back from front on pax side of plenum, then bring coil mount up from underneath onto screws (which are of sufficient length) and then fit washers and nut to both, tighten properly. BEFORE YOU ACTUALLY remount coil, remove the small hose which goes from under the throttle body to the lower manifold. Fit blanking plug (supplied) to outlet on throttle body and fit length of 3/8 hose to lower manifold hose outlet, secure with clamp. If you miss this little step this hose can be extremely difficult to fit although not impossible.
10. Red arrow indicates the side facing passenger inner mudguard.





11. Fitting the SC bracket. Clean front of cylinder head where the coil pack was previously mounted. Now find the little triangular shaped plate, sit this against front of cylinder head so that the hole positions line up with the 3 holes in cyl head. Now take SC and bracket (2 people needed here) and push a countersunk bolt through one of the 3 larger holes and fit one of the 3 spacer sleeves to the other side of it. Now bolt on supercharger bracket to front of cylinder head (has SC and idler already mounted) and fit last 2 countersunk bolts and tighten all bolts (allen key drive) properly. One person will hold SC and bracket in position the other will start the 3 bolts with spacers.



12. Now fit ducting (U shaped piece) to SC and engine T/B. Position this piece so it JUST clears the inner guard, this will allow max clearance between this pipe and exhaust extractor system



13. Next fit the boost return line, the valve is already fitted; you just need to cut the rubber 1" right angle hose so it reaches the 1" tube fitted to SC intake pipe. Tighten all

clamps once this is done. Now fit the vacuum pressure actuation line from the boost return valve to small vacuum hose that exits the drivers side rear of the intake plenum chamber. Cut hose to length and fit using the supplied barbed T. Fit boost gauge at any later time.



14. Now fit the air temp sensor into hole in alloy intake (16mm) provided (not shown), you will have to first remove the air temp sensor from the original air box. Shown below inside of white circle is air temp sensor. It is retained from the inside with a circular spring clip

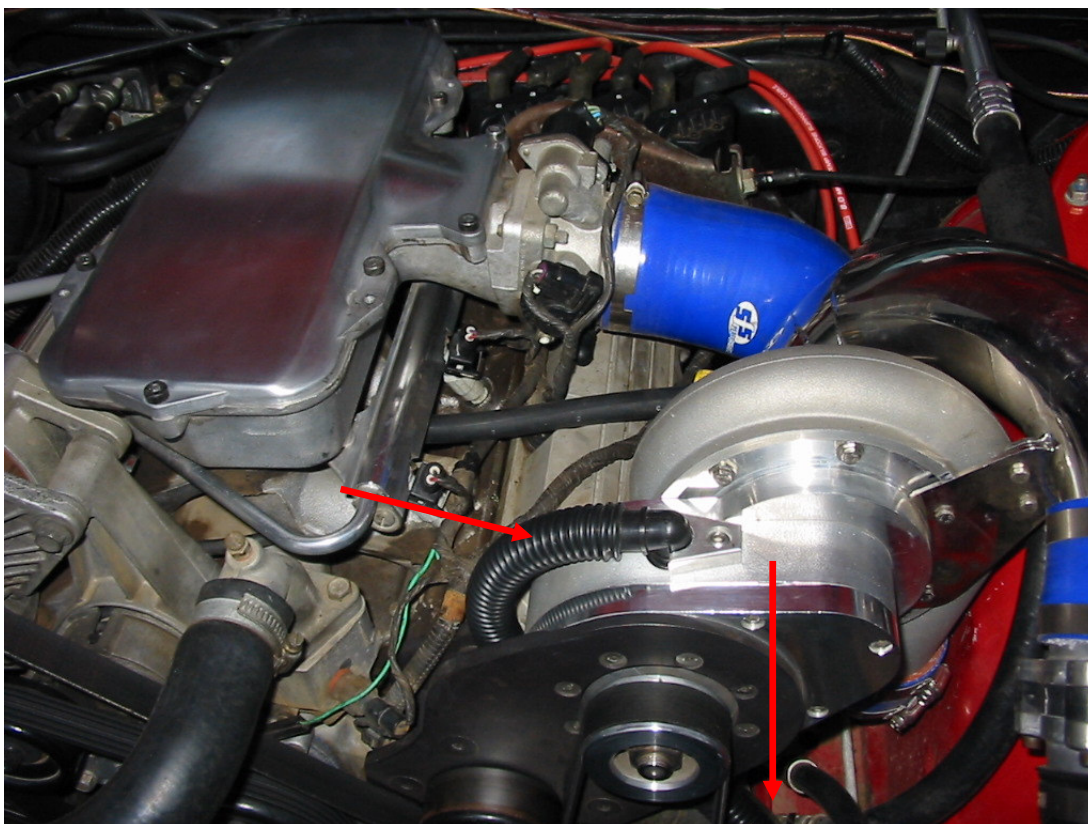
15. Now fit the airflow meter into the 45 degree silicone hose on SC air intake

16. Fit air filter onto intake side of AFM and make sure it doesn't touch any other parts,



17. Fit SC cooling system. Push the 19mm convoluted hose onto the LOWER air fitting on SC transmission, not upper (as shown) for VS model. 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. Take care this newly installed hose DOES not rub against the drive belt, doing so will rub hole through hose and result in less cooling air reaching the SC.



18. Wiring for the fan unit, power should be key switched so anytime the key is turned to the ON position fan should be running. Power supply wiring for the fan unit contains a fuse and an earth lug is taped to the wiring for purpose of earthing. NEVER PUT YOUR FINGERS ANYWAY NEAR THE RUNNING FAN, IF YOU CAN HEAR IT RUNNING THAT IS SUFFICIENT. If fan does not run check you have polarity of wires correct.
19. Time to refit the main drive belt to engine. Locate the 6PK3032 belt provided and route in same manner as stock except go under the new idler (should have been refitted) and then up and over the SC pulley then down the AC pump pulley, otherwise its all the same. Obviously the belt tensioner will need to be placed into its most downward position so that belt will fit on. Carefully check that all the ribs are correctly engaged on all pulleys before releasing the tensioner. Check that belt has 12mm of clearance past bottom radiator hose, this is essential lest the belt rub through the hose. To gain clearance loosen hose clamps and adjust hose for best clearance. Tighten radiator hose clamps. Zip tie hose away from belt if clearance is still an issue
20. At this point all the under the bonnet jobs should be completed. Continue until they are ☺. Test close the bonnet CAREFULLY! Check everything clears the bonnet, not being careful could result in a bonnet please.
21. Now, time to refit your newly reprogrammed ECU, this is simply a matter of refitting all the plugs into all the sockets, each plug has a specific socket so its not possible to mix them up.
22. Now you are ready to start the engine, but wait see next point

23. 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. Its best to crank for 5 secs, then stop for 5 and so on until the engine fires. If no activity after 8 trys then something may well not be right
24. When engine starts be ready to stop it immediately, listen for any ominous 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.
25. If everything checks out ok its time for you to begin the running in process, this consists of VERY easy driving for 200kms. **This is absolutely crucial so the supercharger will have a long and trouble free life. This initial 200km of use will allow the supercharger bearings to adjust their lubricant level and run at a significantly lower temperature than what they otherwise will.** Failure to abide by this is likely to bring problems. 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.
26. After you have covered the initial 200km 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.
27. 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!!

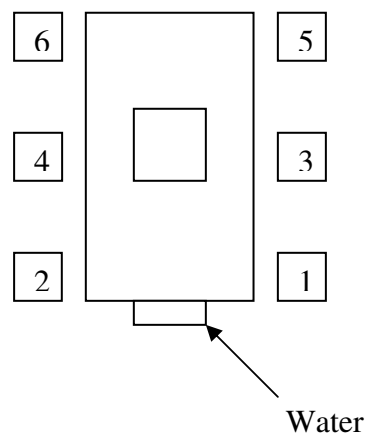
HOLDEN V6 3.8 ECOTEC cylinder/spark lead order

When the coil pack mount is shifted essentially all that happens is that the coils (on their alloy mount) are lifted up from the front and moved backwards to the rear of the left side cylinder head and then bolted to the new bracket. Generally all the leads fit except for cylinder 1 lead which is supplied in the kit. This lead is 595mm in length.

The following is helpful you mix up your sparkplug leads after reinstalling the coil-packs on their mount. Coil packs are generally numbered, see image for correct cylinder numbering.



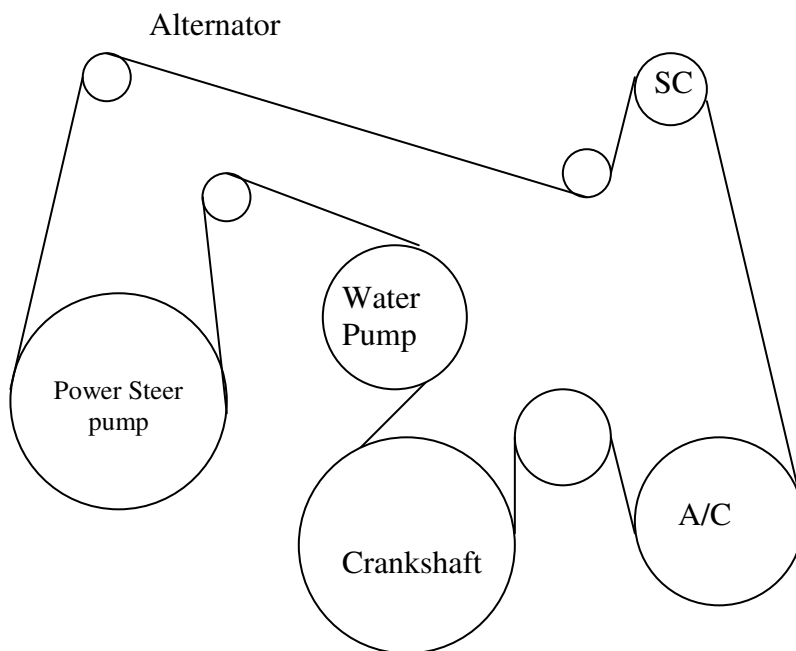
Below is cylinder layout numbering, coil layout different on VS - VY series .



A kit as shipped, VS Kit shown (VT - VY coil bracket mount different)



The image below shows the belt run routing



Liability

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 (when supplied with fuelling/tuning modifications) 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.

Meeting legal requirement for on road use

The Raptor system is NOT sold for on road use, it is up to owner of vehicle whom after fitting the SC system to their car to organise for car to be engineered/inspected/approved by the relevant state authorities and receiving written approval before using vehicle ON ROAD.

FITTING HOTLINE IN CASED YOU MISSED IT A THE TOP IS 0409 897 081

