



Holden VZ Alloytec 3.6
Supercharger System fitment Guide



SAFETY INFORMATION

- REMOVE THE KEY FROM THE IGNITION OF THE CAR – THE CAR MUST BE COMPLETELY OFF – NOT EVEN THE CAR RADIO ON.
- 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 EXERCISE
- ALLOW 2 DAYS ON AVERAGE FOR FULL KIT INSTALL – IT'S NOT A RACE. ACCURACY/ATTENTION TO DETAIL IS MORE IMPORTANT THAN SPEED!!

TOOLS

- Phillips head screw drivers
- Flat head screw drivers
- A large range of spanners/sockets.
- Side cutters (trim zip ties)
- Electrical wiring crimp tool, stripping tool etc
- Box cutter knife to trim hoses to length
- Allen Key set – metric with 6mm Key

PARTS LIST – FULL KIT

- 6 x 550cc injectors
- 1 x Catch can and WTA water reservoir combo
- 1 x complete supercharger bracket
- 1 x VLCBX 30 supercharger
- 1 x heavy duty steel mounting bracket for the SC and idlers
- 1 x 6PK 3032 drive belt
- 1 x Air filter mounting pipe
- 1 x Air filter
- 1 x 32mm BOV
- 1 x 3" silicon bends
- 26 x Hose clamps 3"
- 1 x Hose clamp 2.5"
- 7 x 3" silicon sleeves
- 2 x 3.5" – 3.0" reducers
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- 1 x 1m length of cooling fan hose
- 1 x length of 12mm breather hose with push in connector – no clamps provided
- 1x 450 x 300 intercooler 3" in and 3" out
- Bag of self driller screws to mount intercooler mounts to body
- 4 x M8 x 13mm bolts for intercooler

Kits with options will have parts in addition to the above list

THE INSTALLATION

1. Remove the factory air intake system. Disconnect the air flow meter wiring from the air flow meter and remove all the plastic air box components, mounts until entire intake back to the throttle body has been removed. Take care to store your original parts, you may want them again some time. Remove engine cover – it unclips.



- With all air intake system removed the next item is to remove intake manifold and remove factory injectors and fit supplied injectors. Follow the factory recommended injector change procedure for this task, it is not covered here. Take care and make sure each injector is properly installed and there is certainty they are sealing correctly. Reconnect electrical connects and remove all spilled fuel to prevent a possible fire.
- Reinstall inlet manifold, in the process make sure all gaskets are 100% in good condition. Tension all bolts to Holden service manual specifications. Take care to reconnect all relevant vacuum and electrical connections

2. Supercharger system installation

- See image below for how charger fits to engine
- Remove the power steering reservoir bracket

- You will have to remove 2 bolts from front of engine and one from oil filter mount to install the SC bracket to square bracket with front of engine. There is one normal bolt and one countersunk bolt. Tight bolts firmly.



- Once the bracket is install the supercharger can be mounted to the bracket using the 8 stainless steel countersunk bolts. Power steering reservoir is one of the last jobs to remount much later on. Fit the idler pulley to the supercharger mounting bracket. Tighten retaining bolt firmly. It is not the practice to loctite any bolts in this kit.

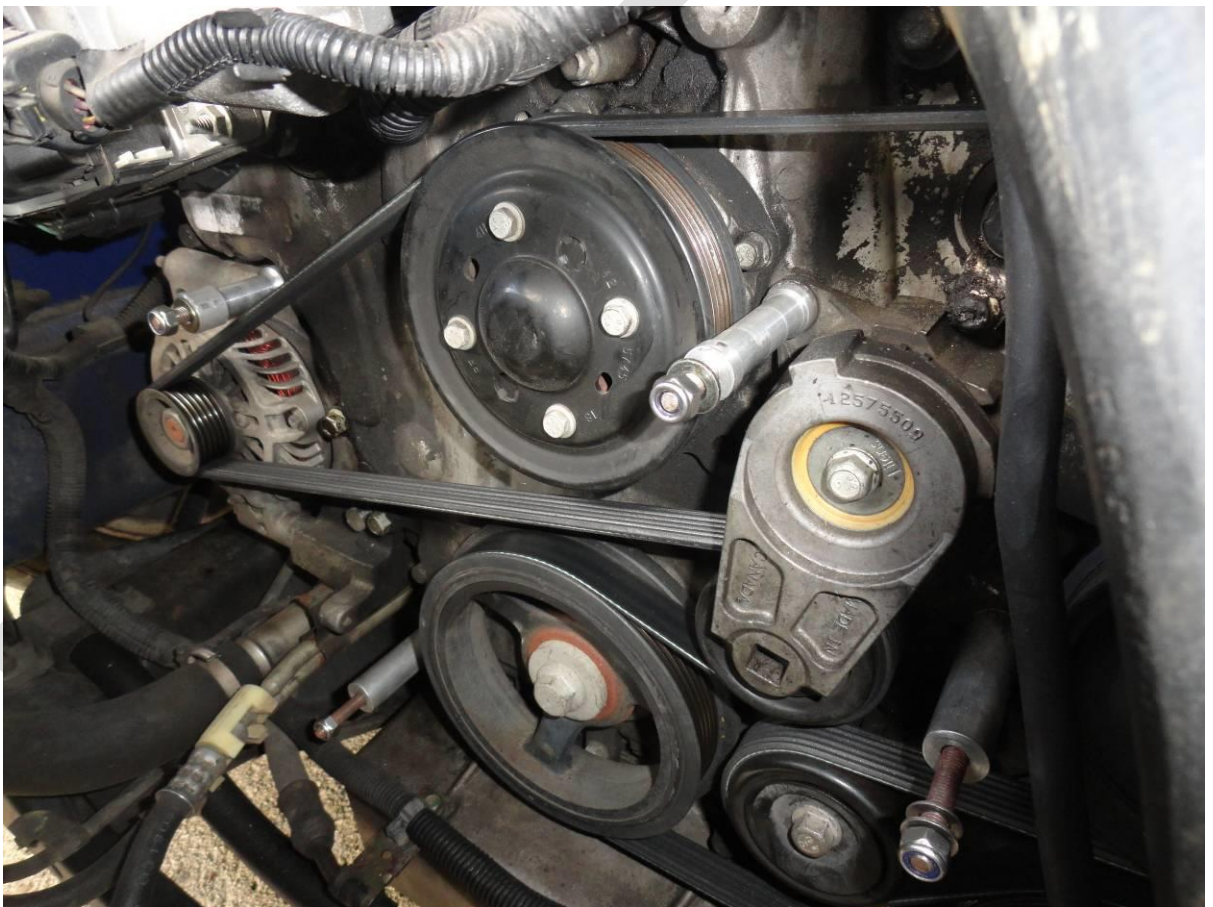


- Engine drive belt (6PK3032) can then be fitted. The belt routing is as per normal with the addition of going around charger and the new idler pulley. Belt is automatically tensioned. Take care with the auto tensioner, you can injure yourself.
- At this point the supercharger should now be mounted, drive belt fitted, injectors in, spark plugs replaced (if needed) and fuel pump should be installed

- REMOVE trim cover across top of radiator, several plastic fasteners. Unplug electrical connections for (drivers side plug) radiator fans and remove fan assembly from vehicle. No tools required. Some manipulation needed to remove assembly past top radiator hose

3. INTERCOOLER SYSTEM INSTALL

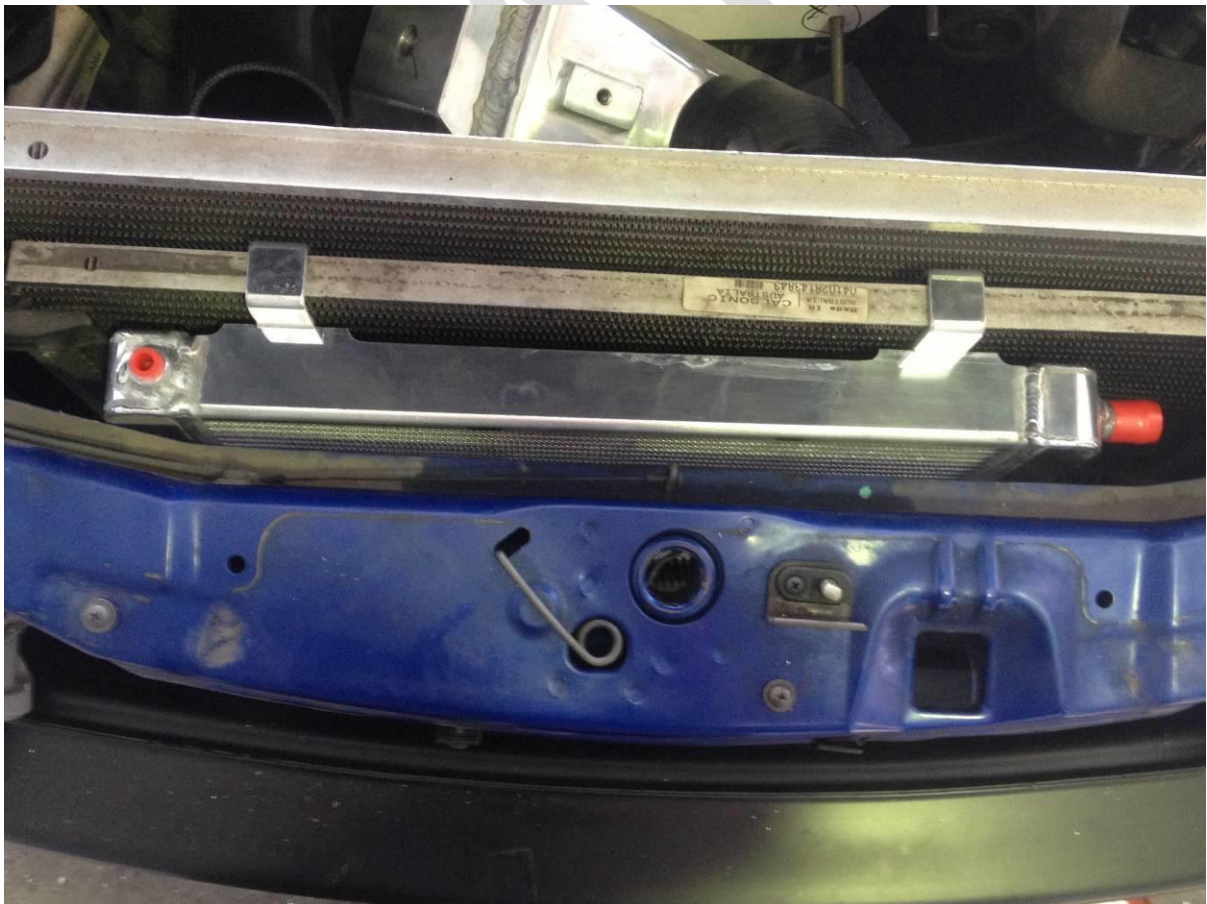
- The intercooler mounts to the front of the engine. Remove bolts (4) at the pictured locations and install the threaded sections with spacers in the particular positions as shown in the following images. The spacers with the machined mid sections go on the top 2 bolts, the one with deepest machining goes near the alternator.



- Screw threaded sections in by hand until they bottom in their holes
- Now fit the intercooler and use the washers and nuts to fasten the intercooler onto the threaded bolts. Take not of the position of the silicon hoses and the water connection fittings, they must be as pictured on next page.



- Next – fit the intercooler radiator, it simply drops in from the top. No tools needed. See image on next page.

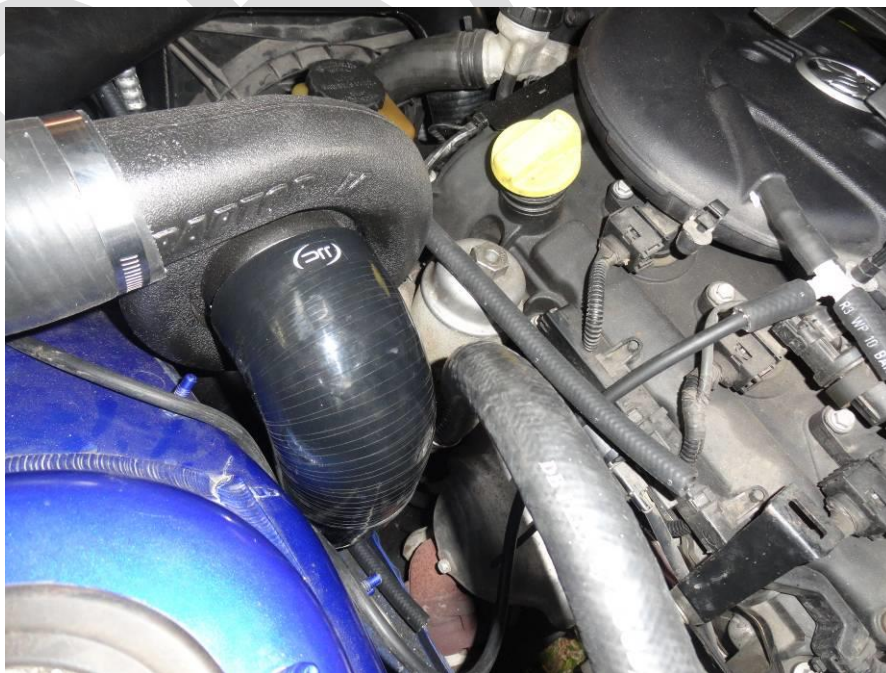
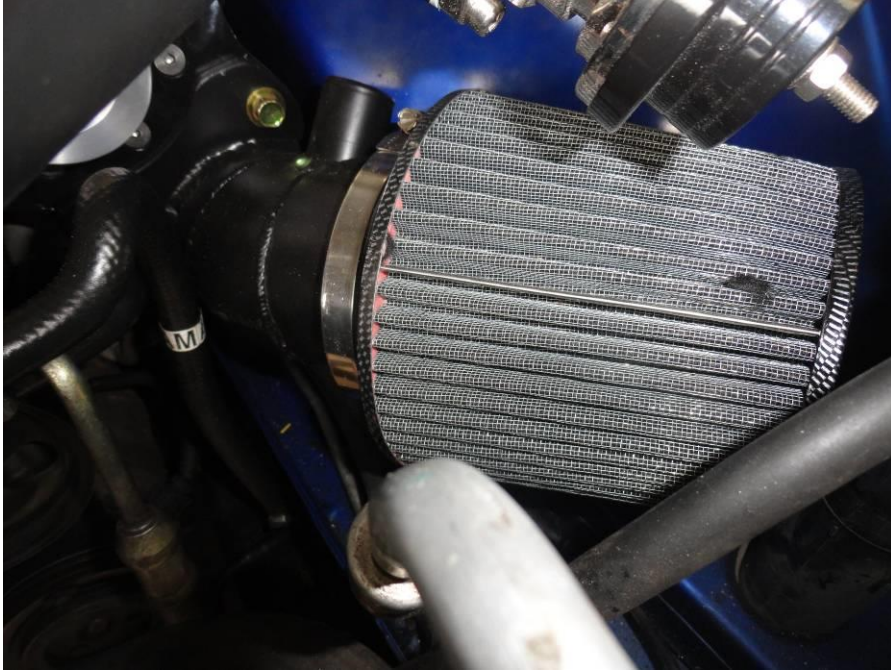


- REINSTALL the radiator fans, clip into place and make 100% sure to reconnect the electrical connection. The engine will overheat if you don't.
- Time to extend the air flow meter wiring loom. You have been supplied with wire to the correct length and some corrugated trim tube as well. There are 5 wires in the loom – you are adding more than 1m in extra length. You need to make no mistakes when soldering this extension into place. An auto electrician is strongly recommended if you have poor soldering/electrical skills. You start by cutting off the plug and about 75mm of wiring with it, then add in the supplied wire in the correct way. Job done you will find the finished loom can be clipped into holders across the top of the radiator.



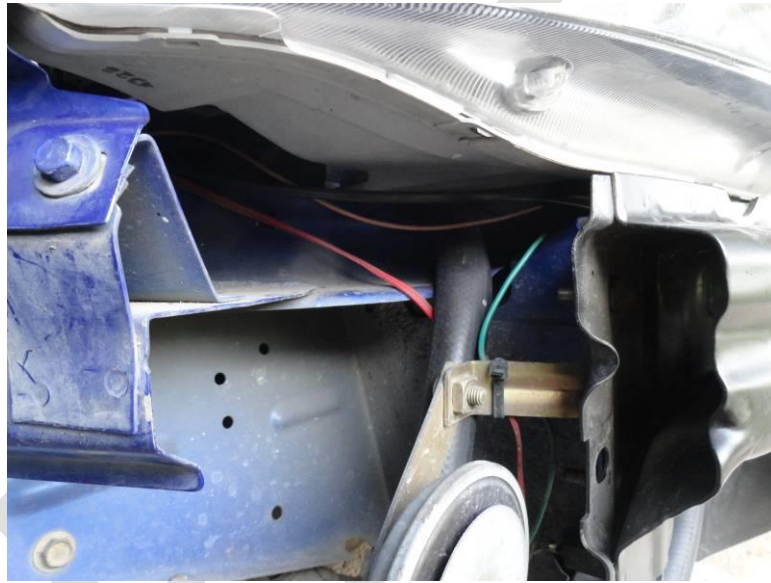
- Now time to fit all the pressure pipework from intercooler to the throttle body. See picture above, double check all your hose clamps and plug in the airflow meter to finish off this task. Most of this section will be preassembled, you only need to add in the air flow meter which must have its screened end facing towards the cars battery

- Next task, fit the double silicon right angle section of 83mm bends (assembled as one piece) and also the air filter mount. See pictures below. When completed you should have the entire air feed to the supercharger in place. There is NO hose clamp for the 83mm silicon to metal 83mm pipe that runs under the supercharger as there is NO way to tighten the clamp, nor is it really needed.



- Time to begin running the water hoses – REMOVE FRONT BUMPER BAR. A few screws along top in centre and a couple down each side in front of the front tyres. Bumper can then simply be unclipped from the vehicle, store it away carefully where it cannot be knocked over by accident or by wind.

There is a hose with bends etc that goes from top of the intercooler which is mounted to the engine and connects to the top most fitting on the radiator at the front , the hose passes through under the head light as shown – on its way to top of radiator, make sure you hose clamp the radiator fitting



There is another hose which connects to bottom of intercooler and will connect to the outlet of the supplied water pump, this hose passes through under the passenger side headlight in the vacant area shown in picture below. Hoses are generally labelled, look for indications of what connects to what

The pump will also come prefitted with hoses and connections, the suction side of the pump will connect to the bottom outlet of the PWR radiator. The hose coming (the bottom of intercooler) from the passenger side of vehicle connects to the pump outlet. The pump should be at the same level as the bottom of the intercooler radiator

Now that the pump is installed you will note a poly Tee piece on the pump outlet side, the 3/8" hose that fits to this connects to the brass fitting on the side of the supercharger itself – on the side away from the engine

There is a short hose then which connects from other side of supercharger to brass fitting at the top of the I/C liquid reservoir (front most of the 2 catch cans)



Finally, there is a very long 3/8" hose which connects from the bottom of the front catch can to the brass fitting at the top drivers side of the PWR radiator, this is the system refill hose.

This completes the entire liquid transport system – at the later point when all hardware is installed fill the system thoroughly with water, test the system for leaks.

You must be 110% sure the pump is moving water in the system, you can check by removing the brass filler bung from the top of the front catch can and look for water being returned into the reservoir. Remove bung and use a torch to see if water is being returned, the water level needs to be down about 40mm from the maximum fill point so you can see the stream of fluid/water coming in. If it is not observed to be coming in then you should assume there is an airlock in the system and further purging, priming is necessary. Continue checking until there is a return water stream. After 1 MONTH of operation the system should be partially drained and refilled with a green colour engine coolant to prevent against internal corrosion of the aluminium components of the system.

4. Engine breather system

Simple – but must be correctly installed



In the image below you can see the breather hose fitted to the tappet cover, this will connect to the catch can top – the catch can which has a filter fitted to it. Remove the original hard plastic hose which normally connects between throttle body and this fitting



Installation of the powersteering reservoir – a single 6mm screw mounts the reservoir bracket to the front of engine in the location shown in picture below



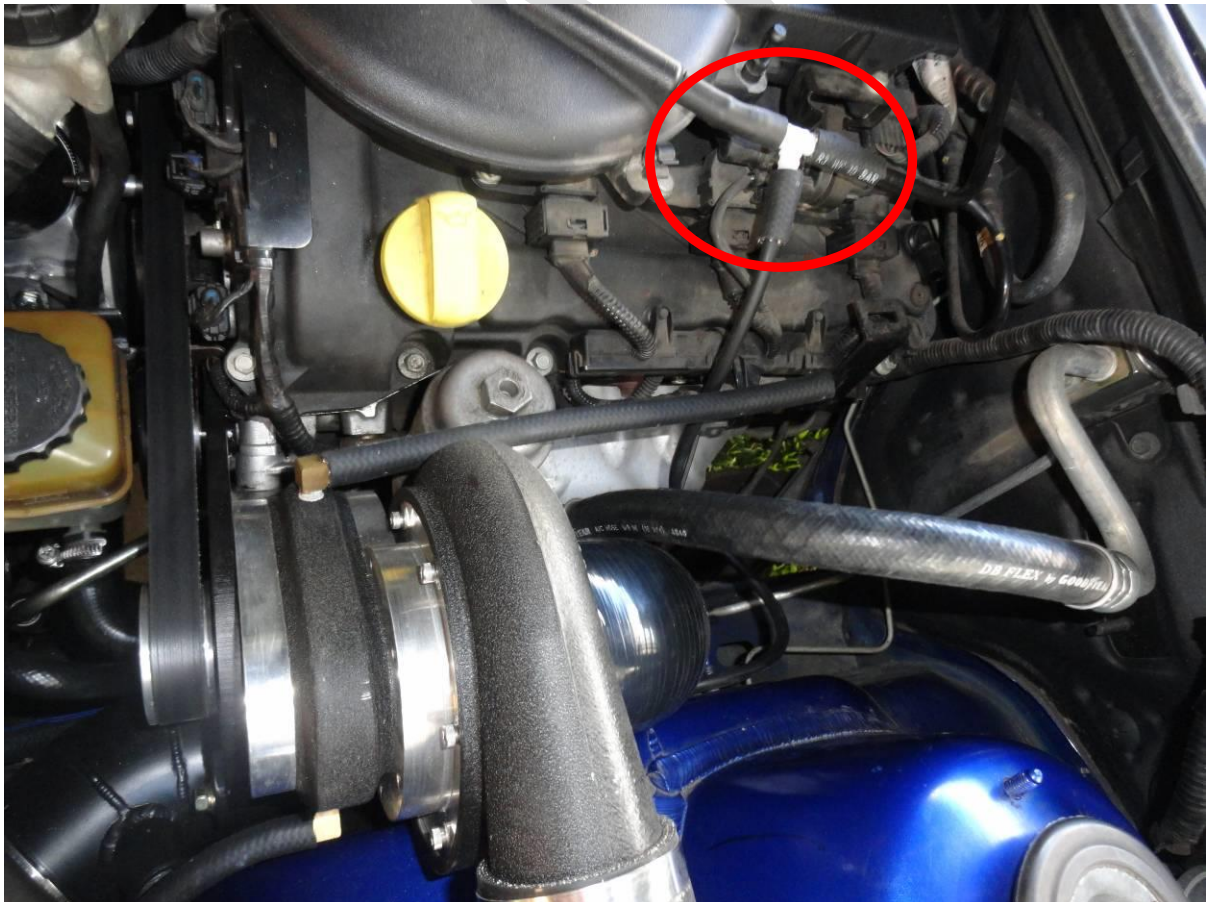
The installation should appear like this when completed, with hoses in same position



Fitting of the pressure pipe from SC to intercooler – a very straight forward piece, see picture below



BOV actuation line connections – cut the engine breather hose and add in the supplied Tee which will already have the vac hose fitted to it. Now connect the other end to the fitting in the cap of the BOV, NOT the lower fitting. That completes your BOV actuation line install.



Electical connections for the water pump for intercooler and if you optioned for the Race supercharger, use this as the signal wire for the second relay to power the cooling fan

See image below, this is from a VZ 190 SV6. Plug in the fuse adaptor as shown.



The engine cover will clip back in place however a trim on the passenger side is necessary – see picture below



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5. Final checks (some of them)

- Check you installed all parts correctly
- Check all bracket bolts are tightened
- Check that all the idler retainers on the bracket are tight
- Check that power steering hoses and reservoir are not being rubbed
- Check air delivery hose clamps are secure
- Check airflow meter wires are plugged in and that loom is properly secured
- Check that the drive belt is properly fitted into the grooves on EVERY grooved pulley
- Check that you have refilled the power-steering system and that oil level is correct after engine has been run
- Air filter fitted and lightly oil

6. ENGINE START UP

- When you are 100% certain that you have properly installed all parts you are ready for engine start up, always be ready to instantly shut down the engine should unusual sounds occur Contact Raptor Superchargers. The supercharger may whine quite loudly since the transmission needs to bed in – nothing wrong.

7. TUNING

- Your tuner is solely responsible for making your vehicle run safely and reliably. If your tuner cant get a good tune into the vehicle then it is recommended that he call Brisbane Tuning and Turbo on 07 3393 1588, they may be able to assist with information and/or your tuner may be able to purchase a start up tune from them. **ENGINE RPM LIMITER MUST BE SET TO 6400RPM**

OPTIONAL EXTRAS SECTION

The Aircooling wiring for the VLCBX 30 R supercharger

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)

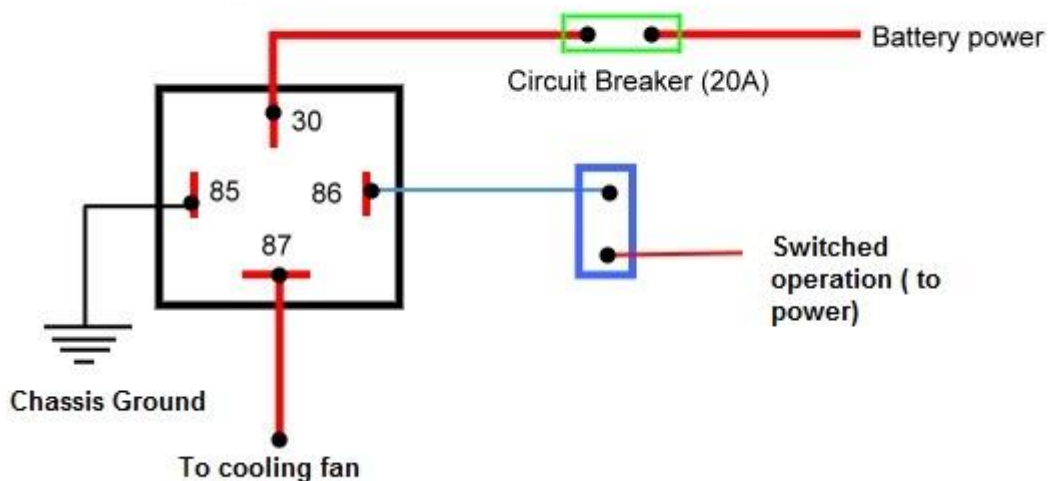
Your Black fan earth wire should ideally go to chassis or even back to the battery

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



7. Get your vehicle certified by State authorities, e.g. blue Mod plate if in Queensland. Inform your insurance company of modifications.

Suggested servicing

Item	Product	Frequency	
Engine oil service	5/40, 10/40 Syn	5000km	
Intercooler fluid	Green antifreeze	Weekly check	
Sparkplugs		Every 50 000k	
Engine belt	6PK3032	2 years	
Auto trans fluid	To suit your vehicle	25 000km	
Fuel	98 octane only	ALWAYS	
Fuel filter	Gen Holden	15000km	
Engine water level	Genuine coolant	Weekly check	
Differential oil	Synthetic oil	Every 20 000km	

EXHAUST SYSTEM

A very high flow exhaust system is required, with twin 2.5" (100 cpi) catalyts and then either twin 2.5" system or single 3" system

Headers/Extractors are essential to allow your Alloytec engine to reach full potential

Example system



Images you can refer to:







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Recommended tuners

Qld

Brisbane Tuning and Turbo

Wolloongabba

NSW

ACM engines and dyno

10 Kirkcaldy Street

BATHURST NSW 2795

Castle Hill

Awesome automotive

DRAFT

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.

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.

Lawful operation

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