



HOLDEN COMMODORE VE V6  
ALLOYTEC / SIDI 3.6L (2006-2013)

**VORTECH ENGINE BELT DRIVE  
SUPERCHARGER KIT  
INSTALLATION MANUAL**

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# INTRODUCTION

**Congratulations on selecting the best performing and best backed automotive supercharger available today. Before beginning this installation please read this instruction booklet thoroughly.**

CAPA Supercharger Systems are a performance improving device. This product is intended for use on healthy and well maintained engines. Installation on a worn-out or damaged engine is not recommended and may result in failure of the engine and or the supercharger. CAPA IS NOT RESPONSIBLE FOR ANY DAMAGES RESULTING FROM THE USE OF THIS KIT.

**For best performance and durability please take note of the following key points:**

1. Use minimum of 96-98 RON unleaded fuel
2. The engine must have stock compression ratio.
3. If the motor has been modified in any way, check with CAPA prior to installation.
4. Change your oil and oil filter. Refill with the best synthetic oil available.
5. Check that all components of the ignition system are in top condition.
6. Cold Starts - never race your engine when your engine is cold. Allow water temperature to rise up to operating range before driving above 2500 r.p.m. Engine damage may result in high r.p.m. and boost conditions when cold.
7. Always listen for signs of deterioration (pinging) and discontinue hard use (no boost) until the problem is resolved.
8. Change oil and oil filter every 5,000km. **OVER FILL OIL BY 0.5 LITRE WHEN KIT IS FITTED.**
9. Always use an air-filter.
10. Never strike the supercharger pulley with a hammer or other tools. (Evidence of such force will void warranty).
11. Retention belt after 500-600km, if not sooner, because the belt will stretch during initial brake in period. Tighten belt only enough to stop slippage (the belt must still have some flex), over tension of the belt is the cause of input bearing failure
12. Never over-rev supercharger. Internal step up on a Vortech V-3 Supercharger is 1.0 to 3.60. Impeller speed must not exceed 50,000r.p.m (**Sealed Vortech**).

Impeller speed calculated as below:

## **Vortech V-2 / V-3 Supercharger**

$$\frac{\text{Crank Pulley Diameter}}{\text{Supercharger Pulley Diameter}} \times 3.60 \times \text{Engine RPM} = \text{Impeller Speed}$$

13. Never hold RPM on Rev Cut as this will cause damage to the Engine by detonation.

**NOTE:** The reason for grooved belts to move over one or more grooves or come off completely is always due to an alignment problem. Misalignment can also be caused by over-tightening of the belt - which may damage the drive system.

# GLOSSARY

**COMPRESSOR HOUSING**

The housing, which makes up the enclosure portion of the compressor. Also referred to as the volute, scroll or snail.

**COMPRESSOR SURGE**

The phenomenon that occurs when the pressure ratio is too high for a given flow, or impeller speed. All centrifugal compressors can experience it. In automotive use it is most often found during decelerations when the engine speed is still high and the throttle is closed.

**DETONATION**

The uncontrolled rapid expansion or explosion of the air/fuel mixture in the combustion chamber.

**GAUGE PRESSURE**

The measure of pressure above atmospheric pressure.

**IMPELLER**

The bladed wheel inside the compressor housing that accelerates the air.

**INDUCER**

The air inlet portion of the compressor.

**NATURALLY ASPIRATED**

An engine without a supercharger.

**PRESSURE, BOOST**

The difference in pressure between barometric and intake manifold absolute pressure on a supercharged engine (read as gauge pressure).

**PRESSURE, ABSOLUTE**

The sum of gauge pressure and atmospheric pressure. One standard atmosphere = 29.92 in. of mercury (Hg) = 14.696 lbs./in.<sup>2</sup> (psi)

**PRESSURE RATIO**

Manifold absolute pressure divided by standard barometric pressure.

P.R. = gauge pressure +  
atmospheric pressure  
absolute pressure

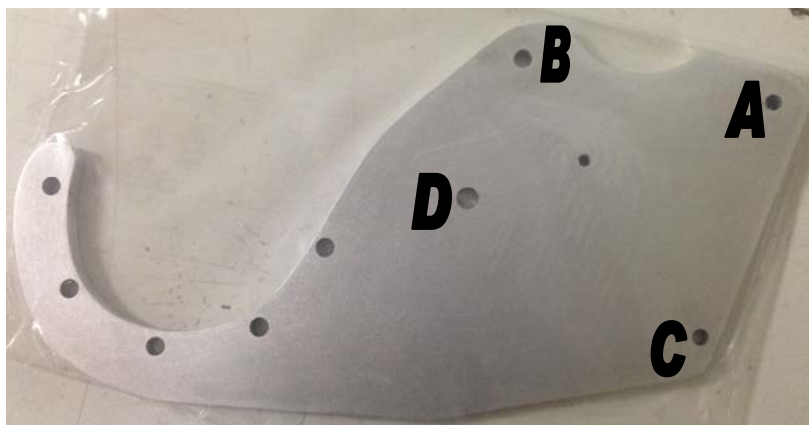
**STOICHIOMETRIC**

The correct chemical mixture of air and fuel to yield complete combustion.

# KITS PARTS LIST

	Quantity	Checked
<b>SUPERCHARGER ASSEMBLY:</b>		
Supercharger	1	
Vortech Oil Feed Bottle & Fitting	1	
Sealed Supercharger Oil	1	
100mm Oil Feed Line & Convolute	1	
Modified Power Steering Bracket & Oil Feed Bottle Bracket	1	
20mm x 1/4 UNC Bolts, Spring and Flat Washer	2	
<b>MOUNT / DRIVE SYSTEM:</b>		
6PK3032 Belt (Alloytec)	—	
6PK 2590 Belt (SID)	—	
Supercharger Bracket	1	
Supercharger Support Bracket	1	
12mm x 30mm Flat & Spring Washers	1	
3/8" x 1.5 UNC Cap Head Bolts, Flat and Spring Washers	5	
(A) M8 x 140 Bolt, Spring and Flat Washer	1	
(A) Machined Pedestal with Milled Cut Out – 79mm	1	
(B) M12 x 160 Bolt, Machined Head	1	
(B) Flat Washers	2	
(B) Nyloc Nut	1	
(B) Idler Insert Spacer with 12.00mm Hole	1	
(B) Machined Pedestal – 39mm	1	
(B) LS1 48.00mm Steel Idler Pulley	1	
(C) M8 x 140 Bolt, Spring and Flat Washer	1	
(C) Machined Pedestal – 79mm	1	
(D) 1x M12 x 160 Bolt, Spring and Flat Washer	1	
(D) Machined Pedestal – 36.5mm	1	
(D) Machined Magnuson Idler Spacer with 12.00mm Hole	1	
(D) Machined Spacer – 9mm	1	
(D) Idler Pulley – Gates Single Bearing #36213	1	
(D) Shim Washers	3	

**Parts List Continued on Next Page...**



## KITS PARTS LIST, CONTINUED

	Quantity	Checked
<b>AIR INTAKE</b>		
CAPA Air Filter with PCV Fitting	1	
60-108mm Hose Clamp	1	
<b>AIR DISCHARGE</b>		
90° 3" Bends Cut Back	2	
60-108 Hose Clamps	4	
Blow off Valve	1	
Blow off Valve Sock & Tie	1	
1000mm Blow off Valve Hose	1	
19-38mm Hose Clamps	3	
30mm x 25mm Hose	1	
Brass T Piece (Blow off Valve Line)	1	
1200mm x 4mm Vacuum Hose	1	
960mm x 10mm PCV Hose	1	
3/8 Barb Joiner -	1	
1/2" - 3/16" Barb Tee Joiner	1	
<b>PCV HOSE FITMENT</b>		
<u>ALLOYTEC</u>		
One Way Valves	2	
40mm x 10mm Hose	2	
MH6 Clamps (8mm – 22mm)	4	
CH1765 Rubber Hose (Original Clamps)	1	
1000mm 3/8 Fuel Hose	1	
<u>SIDI</u>		
<u>PCV Driver's Side</u>		
40mm x 10mm Fuel Hose	2	
One Way Valve	1	
<u>PCV Passenger's Side</u>		
1500mm x 1/2" Fuel Hose	1	
<b>WASHER BOTTLE REPLACEMENT</b>		
Washer Bottle	1	
Washer Bottle Bracket	1	
6mm x 16mm Bolts, Nuts & Flat Washers	3	

**Important before beginning installation, verify that all parts are included in the kit.  
Report any shortages or damaged parts immediately.**

## PREPARATION & PART REMOVAL

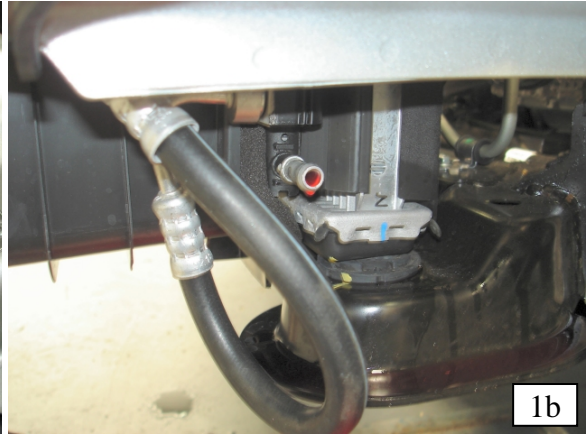
1. Preparation and Part Removal
2. Remove front bumper and lower cover
3. Remove top radiator cover
4. Remove left hand headlamp
5. Remove engine cover
6. Remove airflow meter, ducting and complete airbox
7. Remove Belt



# INSTALLATION

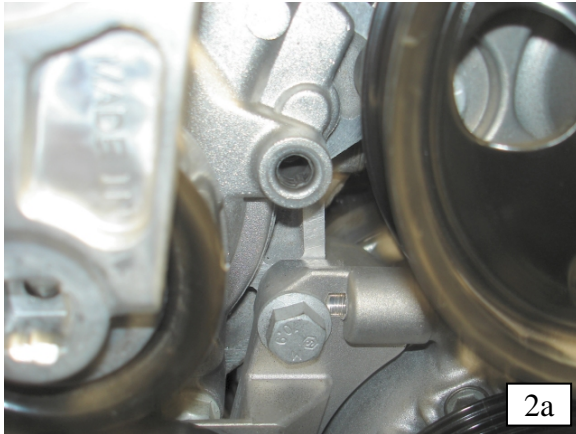
1. Drain power steering fluid and remove both power steering hoses from the car retaining all clamps. Mount power steering reservoir bracket to passenger side inner guard underneath positive battery terminal using an 8mm nut, flat & spring washer.

Slide reservoir back into bracket in it's original position, fit 90° rubber hose to pump and reservoir then fit and route hose from bottom of radiator to reservoir, cover in convolute.



## 2. Supercharger Bracket Fitment Preparation

Remove 12mm bolt above power steering pump and discard. Remove timing cover bolt between automatic tensioner pulley and power steering pulley and discard.





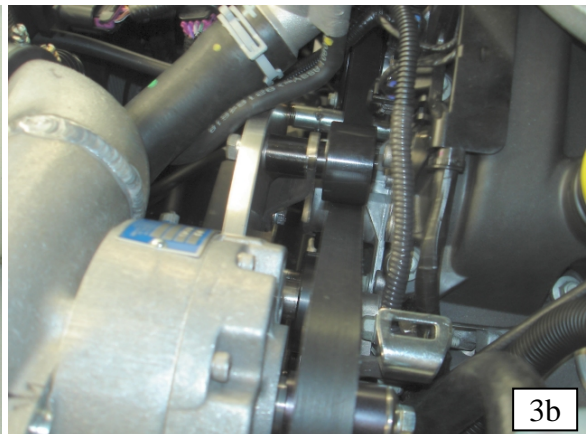
- 3.** Fit top bracket spacer which is machined to take idler pulley. An idler support brace is also fitted at this time. Use 10mm x 30mm bolt, flat & spring washer to mount idler to bracket and 8mm x 20mm bolt to mount support bracket.

Fit bottom spacer to idler between idler pulley and power steering pulley using 135mm x 8mm bolt & flat washer.

Fit back spacer to automatic tensioner mount hose using 135mm x 8mm bolt & flat washer.

Use 160mm x 12mm bolt, flat & spring washer to mount 62mm steel idler & spacer shank to bracket and then to engine as per photo 3b.

The three mounting bolts will align with the bolts removed previously.



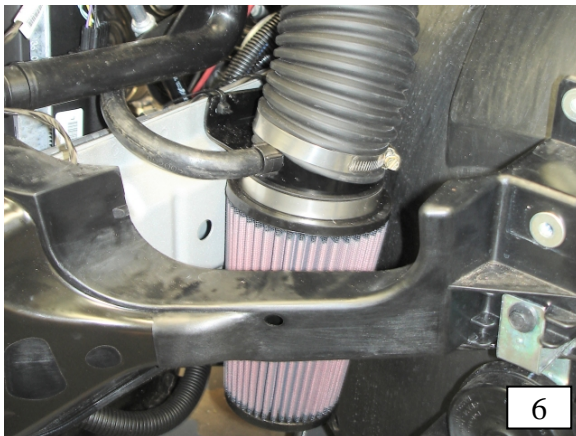
- 4.** With bracket mounted and bolts tightened, fit supercharger to bracket in car and fasten using five 1 ½ x 3/8 cap head bolts, spring & flat washers. At this stage mount the blow off valve to the volute as per photo and fit blow off valve hose and sock.



5. With supercharger in position, fit oil feed bottle to power steering bracket and route hose to oil feed fitting on supercharger, cover with convolute. Use two 20mm x 1/4" UNC bolts and flat washers, mount to bottle.



6. On passenger side chassis rail underneath the supercharger volute, mount the air filter sleeve by drilling two 6.5mm holes in the top lip of the rail. Fasten the sleeve with two 6mm x 16mm bolts, flat & spring washers. Mount air filter to base as per photo.



7. With the air filter mounted, fit convoluted tube from filter to supercharger outlet on the volute as per photo.

Fit the 3" 90° bend to the throttle body then mount airflow meter between the throttle 3" 90° as per photo. Make sure clamps are tight and have enough clamping surface.



## 8. PCV System

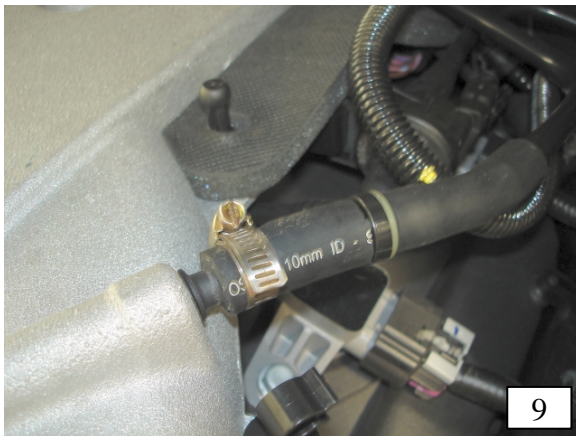
Alloytec Only –

Fit PCV hose from passenger side rocker cover, route the hose to the air filter sleeve and connect to fitting.



Alloytec Only –

At this stage you also need to fit two one way valves, one to each side of the inlet manifold. Fit where the vacuum hoses come out of the manifold and clamp into position.



SIDI Only –

Drivers Side PCV.

Using the hose and one way valve supplied cut and add in the hose in the centre of the manifold. Make sure the valve allows air to travel into the manifold and not out into the engine (preventing boost pressure to feed back to the rocker cover)



## 8. Cont

SIDI Only –

Passengers Side PCV

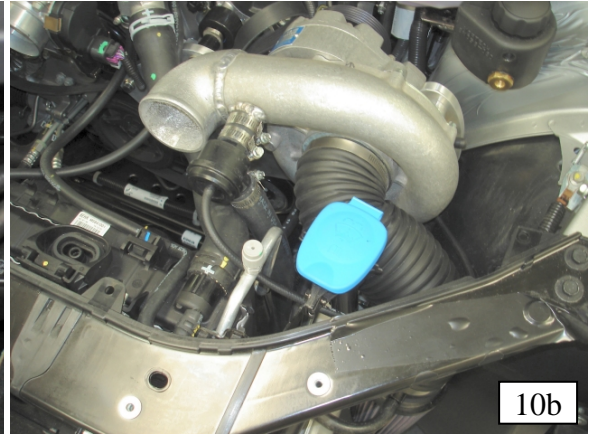
Early you would have removed this hose from the intake duct as you removed the air box assembly in the preparation stages. Ref photo A., You now need to cut off the fitting and disregard the fitting from the hose. Refer photo B. Slide the ½" hose provided onto the tube. Route hose down into the inner guard ready for intake fitment later on. Ref photo C.



## 9. Blowoff Valve Vacuum Source

Alloytec Only –

Remove the vacuum line from the brake master cylinder and slide a T piece in the original hose and reclamp. Fit 30mm of hose to the other end and clamp to the master cylinder fitting. Fit 3mm vacuum line to the outlet on the T piece and route vacuum line to the blowoff valve. Keep away from hot or moving parts.



SIDI Only -

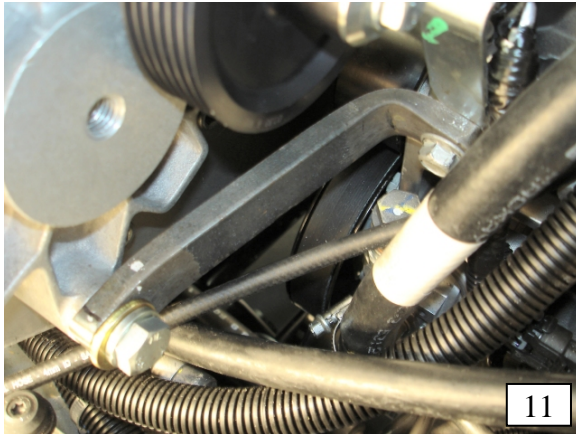
Disconnect the vacuum line that routes to the brake booster from the passenger side of the manifold. Add the 3/8" Tee Piece hose assembly as per the picture. Re fit the booster hose to the other side of the tee and on the reduced add connect the 3/16" hose to the fitting.

Non Intercooled – Connect the 3/16" hose to the BOV on the front of the supercharger.

Intercooled – Route 3/16" hose down under the passenger side chassis rail ready for BOV connection later in intercooler piping.

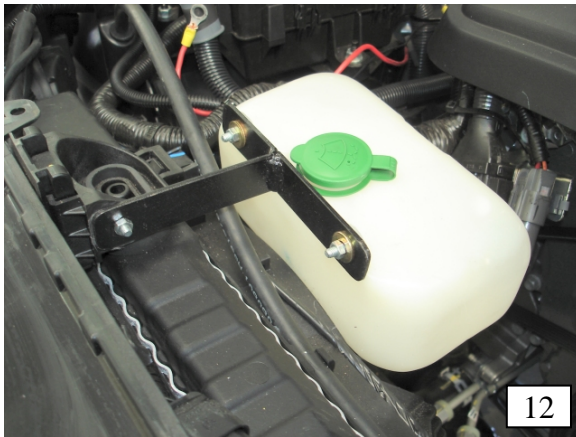


- 10.** With everything in place, fit supercharger support brace. Use one 12mm x 30mm bolt, flat & spring washer to mount to supercharger and use original bolt to mount to engine. Tension but don't over tighten.

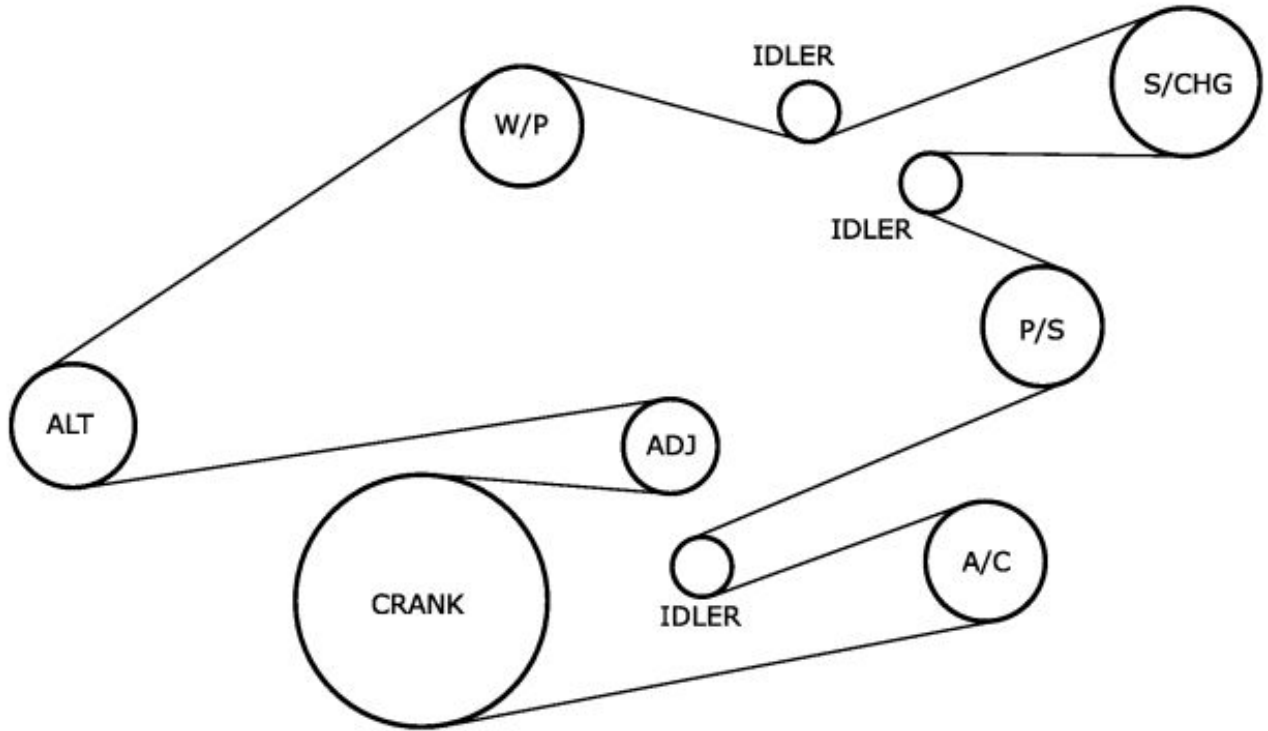


**11. Washer Bottle**

Mount washer bottle to bracket with two 6mm x 16mm bolts, nuts, flat & spring washers. Drill a 6mm hole through the plastic radiator mounting bracket & fasten the bracket using 6mm x 16mm bolt, two flat washers & nut. Fit the original pump to the bottle and fit all original hoses and wiring.



12. Fit belt and start car to check alignment. Drive vehicle for 10km but to not take vehicle over 4000rpm. This is to let the vehicle and computer learn itself. If the engine light has appeared, disconnect the battery for a minute after driving 10km. The vehicle should now be ready to be checked on the dyno.



**Diagram 1:** Belt Layout

## **WARNING**

1. DO NOT ATTEMPT TO OPERATE VEHICLE UNTIL ALL COMPONENTS ARE INSTALLED AND COMPLETE. SUPERCHARGER KITS EXTRUDE A HUGE AMOUNT OF HORSEPOWER FROM A STOCK ENGINE THEY ARE NOT INTENDED FOR CONTINUOUS OR EXTREME PERIODS OF MAXIMUM POWER OUTPUT. IT IS NOT OUR INTENTION TO CREATE RACE PROVEN HORSEPOWER BUT LEISURE ENDURING SYSTEMS.
2. WARRANTY POLICY FOR 12 MONTHS, UNLIMITED KILOMETRES COVERS FAULTY COMPONENTS PROVIDED IN SUPERCHARGER KIT. POLICY DOES NOT INCLUDE LABOUR TO REPLACE FAULTY PARTS.
3. THE RESPONSIBILITY OF ADR COMPLIANCE AND INSURANCE FOR THIS KIT FITTED TO A VEHICLE THAT IS ROAD REGISTERED AND DRIVEN IS THE RESPONSIBILITY OF THE VEHICLE OWNER.
4. RESPONSIBILITY FOR CORRECT FITMENT OF THE KIT IS THE REPONSABILITY OF THE FITTER.
5. DAMAGES TO VEHICLE OR SURROUNDS IS THE RESPONSIBILITY OF THE VEHICLE OWNER. PROVIDED THE KIT FITMENT IS CORRECT, ACCORDING TO THIS MANUAL.

***GET OUT THERE & ENJOY...***

