HOLDEN COMMODORE VT-VZ V8
5.7L GEN 3 & L76 (1999-2007)
***EXCLUDES HSV & VZ MONARO***

# VORTECH INTERCOOLER & PIPE KIT INSTALLATION MANUAL

**For any further technical information contact:**

**Centrifugal Air Pumps Australia Pty Ltd**
20 Verrall Cres, Berri SA 5343, Australia
Email sales@capadrift.com.au
Phone 08 8582 3499 (Intl. +61 8 8582 3499)

# INTRODUCTION

Congratulations on selecting the best performing and best backed automotive Intercooler 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 only Premium unleaded or OPTIMAX 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. 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.
5. Always listen for signs of deterioration (pinging) and discontinue hard use (no boost) until the problem is resolved.
6. Change oil and oil filter every 5,000km. Over fill sump by 1 Litre. (Std Sump only)
7. Always use an air-filter.
8. Never strike the supercharger pulley with a hammer or other tools. (Evidence of such force will void warranty).
9. 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), overtension of the belt is the cause of input bearing failure.

# KITS PARTS LIST

| Part no. | Description and Size | Quantity | Checked |
|---|---|---|---|
| 1. | Intercooler & Core Assembly | 1 | |
| 2. | Pipe A, 90° Steel Tube, Supercharger through Inner Guard<br>**Note:** VZ Used Different Pipe, Refer to Supplement | 1 | |
| 3. | Pipe B, Short 90° Steel Tube, To Intercooler | 1 | |
| 4. | Pipe C, Short 90° Steel Tube, From Intercooler | 1 | |
| 5. | Pipe D, S-Bend, Through Inner Guard | 1 | |
| 6. | Pipe E, Special Bend, To Throttle Body | 1 | |
| 7. | 76mm x 45° Rubber Bend, Supercharger to Pipe A<br>**Note:** VZ Uses 76mm x 110mm Rubber Joiner | 1 | |
| 8. | 76mm x 45° Rubber Bend, Pipe A to Pipe B | 1 | |
| 9. | 76mm x 85mm Rubber Joiner, Pipe B to Intercooler | 1 | |
| 10. | 76mm x 85mm Rubber Joiner, Intercooler to Pipe C | 1 | |
| 11. | 76mm x 85mm Rubber Joiner, Pipe C to Pipe D | 1 | |
| 12. | 76mm x 76mm x 90° Joiner, Pipe D to Pipe E | 1 | |
| 13. | HS48 Clamp | 13 | |
| 14. | HS60 Clamp | 2 | |
| 15. | Air Filter Pod Mount | 1 | |
| 16. | 300mm x 3 1/2" Convoluted Hose | 1 | |
| 17. | HS12 Clamp | 1 | |
| 18. | RH Top Intercooler Mount Bracket | 1 | |
| 19. | LH Top Intercooler Mount Bracket | 1 | |
| 20. | RH Bottom Intercooler Mount Bracket | 1 | |
| 21. | LH Bottom Intercooler Mount Bracket | 1 | |
| 22. | RH Power Steering Cooler Mount Bracket | 1 | |
| 23. | LH Power Steering Cooler Mount Bracket | 1 | |
| 24. | 16mm x 6mm Bolt, Nut, Spring and Flat Washer | 8 | |
| 25. | 25mm x 6mm Bolt, Nut, Spring and Flat Washer | 4 | |
| 26. | 30mm x 6mm Bolt, Nut, Spring and Flat Washer | 2 | |
| 27. | 15mm x 8mm Bolt, Nut, Spring and Flat Washer | 4 | |
| 28. | Hole Protector Strip | 1 | |
| 29. | BOV Grommet Plug (Low Boost, mounts in Pipe A) | 1 | |
| **VZ Factory Belt Drive Only** | | | |
| | Radiator Overflow Bottle w/ Bracket and Hose | ___ | |

**Parts List continued on Next Page…**

# KITS PARTS LIST, CONTINUED

| Part no. | Description and Size | Quantity | Checked |
|---|---|---|---|
| **NOTE: Parts listed below are required. Already Supplied in Supercharger Kit.** | | | |
| | 85mm x 90° Rubber Angle, Pipe E to Throttle Body | ___ | |
| | 95mm Throttle Body Clamp | ___ | |
| | Blowoff Valve | ___ | |
| | Blowoff Valve Grommet | ___ | |
| | HS16 Hose Clamp | ___ | |
| | 1200mm x 1″ BOV Hose | ___ | |
| | BOV Sock | ___ | |
| | Zip Tie | ___ | |
| | | | |
| **Second Blowoff Valve, Above 7psi Only** | | | |
| | Blowoff Valve | ___ | |
| | Blowoff Valve Grommet | ___ | |
| | HS16 Hose Clamp | ___ | |
| | 450mm x 1″ BOV Hose | ___ | |
| | BOV Sock | ___ | |
| | Zip Tie | ___ | |

| | |
|---|---|
| **NOTE:** | Intercooler supplementary parts are supplied as a separate kit, to convert non-inter cooled into inter cooled systems. |

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

# PREPARATION & PART REMOVAL

1. Remove Front Engine Bay Cover
2. Remove Front Bumper
3. Remove Driver and Passenger Side Headlight

# SPECIAL TOOLS

- dyno or use of
- accurate fuel ratio meter
- boost gauge
- fuel pressure gauge
- fuel return gauge

# INSTALLATION

**NOTE:** Remove Vortech Supercharger unit and send back to CAPA for Outlet modification.
If non-inter cooled kit has already been fitted. Ask about cost.

**1. Mount Driver Side Top Bracket to Top Lip of Bumper Support Bar.**
Measure in 432mm From drivers side intrusion bar end. Drill 6.5mm Hole in top Lip. Fit Bracket to Bar using 16mm x 6mm Bolt, Nut, and Washers. See Image 1 & 2.

**2. Mount Passenger Side Top Bracket to Top Lip of Bumper Support Bar.**
Measure in 487mm from passenger side of bar end, drill 6.5mm hole. Fit Bracket to Bar using 16mm x 6mm Bolt, Nut, and Washers. See Image 1 & 2.

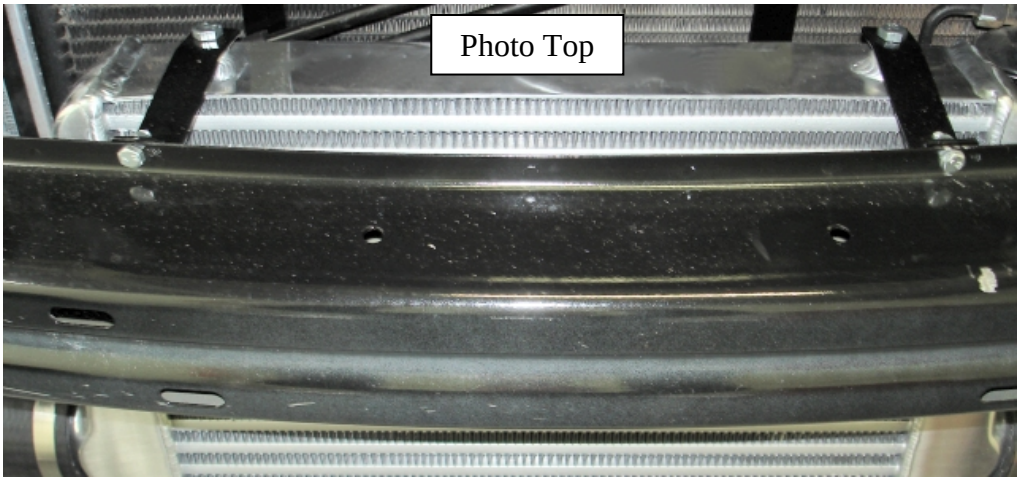


*Image 1. Top Brackets installed on support bar.*

**3. Pre Drill Lower Bracket Holes.**
Place Driver Side Lower Mount Bracket on Radiator Lower Support Panel. Measure in 227mm from Driver Side end and drill outer hole in Bracket to 6.5mm. Fit bracket and mark inner hole and drill to 6.5mm. Remove Bracket. See Image 4.

**4. Pre Drill Lower Bracket Holes.**
Place Passenger Side Lower Mount Bracket on Fit to Radiator Lower Support Panel, Measure in 273mm from passenger side and drill outer hole to 6.5mm. Fit Bracket and mark inner hole and drill to 6.5mm. Remove bracket. See Image 4.

**5. Add Power Steering Cooler Brackets.**

Drill holes for power steering cooler mount brackets in rear lip of bonnet catch panel. Place centre mark on rear lip in line with centre of bonnet catch hole. RH Side – Measure 180mm From Centre mark, drill 6.5mm Hole. Fit bracket in place with 16mm x 6mm Nut, Bolt and Washers to top hole. Bottom hole fits to inner hole of bottom. RH Intercooler Mount Bracket with 25 x 6mm Bolt, Nut and Washers. When fitting cooler bracket.

On the Passenger Side, Measure 120mm From Centre Mark and Drill 6.5mm Hole. Lower Hole measure in from edge of lower radiator support panel same as lower intercooler mounts. Measure in 330mm and drill 6.5mm hole. Fit bracket in place with 2 16x6mm bolts, nuts and washers. Bend power steering cooler pipes in to fit up to brackets and mount to brackets using 30 x 6mm bolts, nuts and washers.

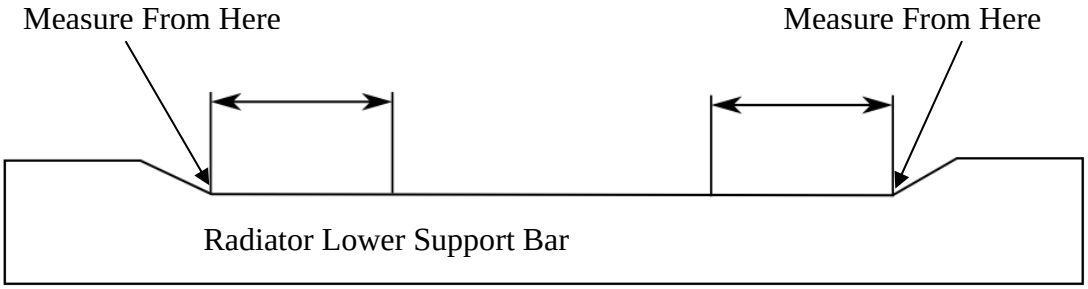



*Image 2. Measuring Bracket Placement for Power Steering Cooler.*

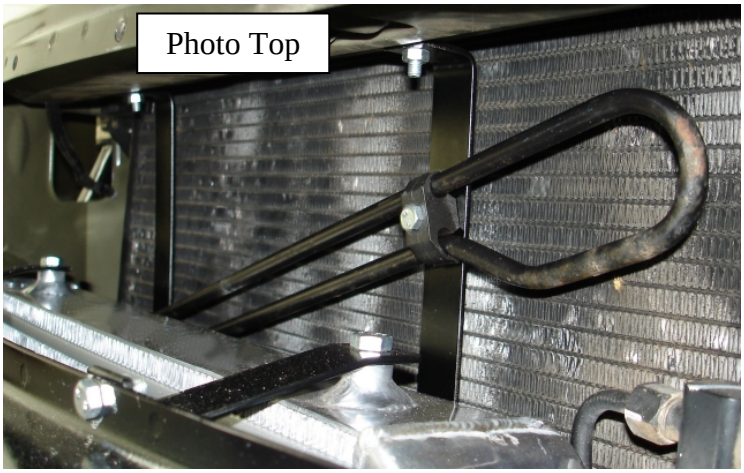



*Image 3. Relocation of Power Steering Cooler*

**6. Mounting the Intercooler.**
Fit lower intercooler mount brackets to bottom of intercooler using 2 15x8mm bolts, nuts and washers. Fit intercooler in place from bottom, up between bumper support panel and lower radiator support panel. Fit 1 16mm x 6mm and 1 25mm x 6mm bolt, nut and washers to RH Bracket and 2 16mm x 6mm Bolts nuts and washers to LH Bracket.

Fit RH and LH top mounts, brackets to intercooler and body using 2 15x8mm bolts and washers and 2 16mm x 6mm Bolts nuts and washers.

*Image 4. Bottom Intercooler Brackets*

**7. Modify Panels**
Cut out panels under Driver and Passenger Side Headlights as per diagram.

*Images 5a, 5b. Cut Panels as shown above.*

**8. Install Drivers Side Pipework, Lower**
Fit Steel Tube 'C' to Driver's Side of Intercooler using 85mm Rubber Joiner and 2 Clamps. Fit Tube D' to Tube 'C'using 85mm Ruber Joiner and 2 Clamps.

*Image 6. Intercooler Pipework, Drivers Side Bottom*

**9. Install Drivers Side Pipework, Upper**
Fit Special Bend Steel Tube Marked 'E' to Tube 'D' using 90° bend and 2 clamps. Fit Steel Tube 'E' to throttle body using 85mm x 90° Rubber Angle and 2 clamps (use 95mm clamp on throttle body).

*Image 7 – Intercooler Pipework, Drivers Side Top*

**10. Install Passenger Side Pipework, Lower**

Remove Supercharger unit from mount bracket, making note roughly where to position s/c outlet to position outlet along chassis rail (underneath supercharger mount bracket) Undo locking tags, remove compressor housing and re-position… Refit tabs and fit into mount bracket…

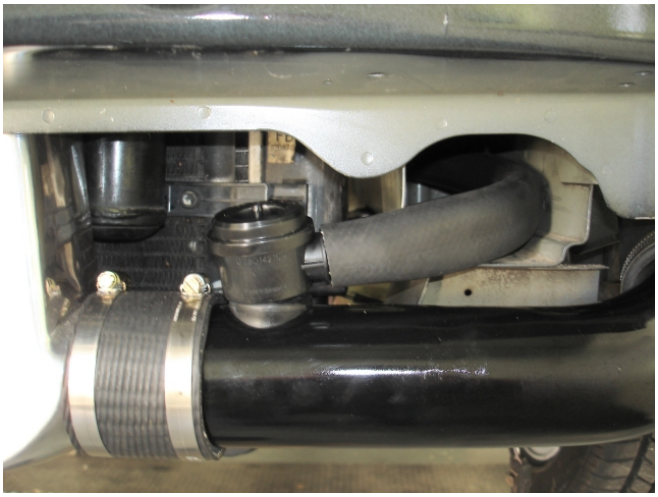
Fit Pipe 'B' to Passenger Side of Intercooler using 85mm Joiner and two clamps.

For low boost applications, fit plug to blowoff valve grommet in Pipe A. For applications over 7psi, a second blowoff valve should be fitted to Pipe 'A'. *See information at bottom of page.*

Fit 90° steel tube marked 'A' to steel tube 'B' using 45° rubber bend and two clamps. Fit steel tube 'A' to Supercharger using 45° bend and two clamps. Align pipes to clear body and headlight, tighten clamps.

Fit 25mm Rubber tube and clamp to BOV. Secure sock to end of BOV hose with Zip Tie. Fit BOV to intercooler pipe 'B'. Route hose up chassis rail.

*For VZ Vehicles, an additional pipe is included. See next page.*



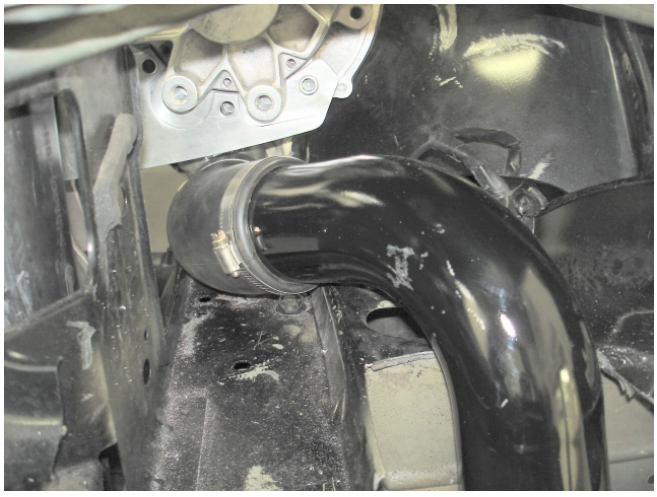


*Image 8a, 8b & 8c. Intercooler Pipework, Passenger Side*

**For applications over 7psi Only**

Fit BOV grommet and blow off valve to tube A. Secure sock to one inch blow off valve hose and secure with zip tie. Fit tube up through hole cut in panel for intercooler piping and secure to BOV with clamp. Route hose up chassis rail.

**For VZ Vehicles Only**

A different pipe and 76mm x 110mm Rubber Joiner are required. See Images below.

*Image 9. VZ Different Intercooler Pipework, Passenger Side*

**11. Cut out air filter pod mount.**

Place air filter pod mount in place behind LH head light as per diagram. Mark around mount cut hole using air saw. Fit protector strip around hole. Fit mount to hole and mark position for holes. Drill 2 6.5mm holes. Fit pod mount in place with 2 16 x 6mm bolts, nuts and washers. Fit Calor tube between blower air intake and mount secure with two clamps. Fit Air filter pod to underside of mount and tighten clamp. Connect air temp sensor wiring to sensor in filter mount.

*Images 10a & 10b. Cut out hole for air filter*

# GENERAL NOTES

It is the installer's responsibility to dyno the car to check that all systems are working correctly, especially maximum fuel delivery and to check for any presence of detonation.

Check boost on dyno and that advertised boost is not exceeded and rpm occurs at designated rpm.

Have injectors cleaned and flowed. A must on used injectors, peace of mind on new injectors.

Make sure that all fuel hoses are in excellent condition, or replace. Check that all clamps are tight and that there are no fuel leaks.

# FINAL CHECKLIST

1. Carefully review the entire installation. Check oil and fuel lines near moving parts and the exhaust system to ensure that these lines are safe, secure and not twisted or kinked. All wires and hoses should be firmly secured with clamps or wire ties.
2. Check all fluid levels. Your vehicle should be filled with premium fuel before any driving. It is important that you performed an oil and filter change. If you did not do so before, it should be performed now before proceeding further.
3. Start engine and idle for a few minutes. Check your timing. You want to run as much timing as possible while avoiding detonation. It is better to lean on the side of less timing and no detonation!
4. Shut off your engine and check for fluid leakage, signs of rubbing parts, and other potential problems. Pay particular attention to fuel leaks, check by using CRC spray any vacuum leaks at base of injector.
5. Check nothing is near any hot spots.
6. Your vehicle should display a significant increase in performance when you step into the throttle, with no detonation, yet should maintain its previous driveability during daily driving. If this is not so, review your installation, then contact CAPA assistance.
7. For best performance and reliability, **always use premium grade fuel** and listen for signs of detonation. Back off throttle should detonation occur. With a properly installed supercharger and appropriate timing, detonation should not be an issue.
8. Never race your engine when your engine is cold. Allow the water temperature to climb into operating range for several minutes before driving above 2,500r.p.m. to ensure adequate oil lubrication.
9. Please review the maintenance and warranty sections within this owner's manual.
10. Please take special note, operation of vehicle without all sub assemblies completed and properly installed may cause failure of major components.

# WARNING

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 PERIODS OF MAXIMUM POWER OUTPUT. IT IS NOT OUR INTENTION TO CREATE RACE PROVEN HORSEPOWER BUT LEISURE ENDURING SYSTEMS.

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