

# **Vortech® Charge Air Cooler**

## **Installation Instructions**



**2013-2014 Ford F-150 EcoBoost**

P/N: 8N310-010



**ENGINEERING, INC.**

1650 Pacific Avenue, Channel Islands, CA 93033-9901 • Phone 805 247-0226  
Fax: 805 247-0669 • [www.vortechsuperchargers.com](http://www.vortechsuperchargers.com) • M-F 7:00 AM - 3:30 PM (PST)

# FOREWORD

This manual provides information on the installation, maintenance and service of the Vortech Intercooler kit expressly designed for this vehicle. All information, illustrations and specifications contained herein are based on the latest product information available at the time of this publication. Changes to the manual may be made at any time without notice. Contact Vortech Engineering for any additional information regarding this kit and any of these modifications at (805) 247-0226 7:00am-3:30pm PST.



## Take note of the following before proceeding:

1. Proper installation of this intercooler kit requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual prior to beginning the installation to determine if you should refer the job to a professional installer/technician. Please contact your dealer or Vortech Engineering for possible installers in your area.
2. This product was designed for use on stock (un-modified, OEM) vehicles. The PCM (computer), engine, transmission, drive axle ratios and tire O.D. must be stock. If the vehicle or engine has been modified in any way, check with Vortech prior to installation and use of this product.
3. Use only premium grade fuel with a minimum of 91 octane (*R+M/2*).
4. Always listen for any sign of detonation (*knocking/pinging*) and discontinue hard use (*no boost*) until problem is resolved.
5. Vortech is not responsible for any clutch, transmission, drive-line or engine damage.

Exclusions from Vortech warranty coverage considerations include, but not limited to:

1. Neglect, abuse, lack of maintenance, abnormal operation or improper installation.
2. Continued operation with an impaired vehicle or sub-system.
3. The combined use of Vortech components with other modifications such as, but not limited to, exhaust headers, aftermarket camshafts, nitrous oxide, third party PCM programming or other such changes.

## ©2014 VORTECH ENGINEERING, INC

All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, or translated into another language in any form, by any means without written permission of Vortech Engineering, INC.

# TABLE OF CONTENTS

<b>FOREWORD</b> .....	<i>ii</i>
<b>TABLE OF CONTENTS</b> .....	<i>iii</i>
<b>TOOLS &amp; SUPPLY REQUIREMENTS</b> .....	<i>v</i>
<b>PARTS LIST</b> (2013-2014 FORD F-150 EcoBoost CHARGE AIR COOLER UPGRADE) .....	<i>vi</i>
1. PREPARATION & REMOVAL .....	1
2. CHARGE AIR COOLER INSTALLATION .....	6
3. FINAL CHECK .....	9

## **NOTICE**

This product is protected by state common law, copyright and/or patent. All legal rights therein are reserved. The design, layout, dimensions, geometry, and engineering features shown in this product are the exclusive property of Vortech Engineering, Inc. This product may not be copied or duplicated in whole or part, abstractly or fundamentally, intentionally or fortuitously, nor shall any design, dimension, or other information be incorporated into any product or apparatus without prior written consent of Vortech Engineering, Inc.

## **FORD F-150 ECOBOOST CHARGE AIR COOLER INSTALLATION**

---

**Congratulations on selecting the best performing and most effective charge air cooler today... the Vortech Charge Air Cooler!**

**Before beginning this installation,  
please read through this entire instruction booklet**

The Vortech Charge Air Cooler upgrade was designed as a street/strip oriented charge air cooler, specifically for use on the Ford F-150 EcoBoost.

As with any power enhancing product, this system is intended for use on healthy, well-maintained engines. Vortech Engineering, Inc. is not responsible for engine damage. Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

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

1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.

---

### **TOOL & SUPPLY REQUIREMENTS:**

- 5/16 Nut Driver
- 3/16 Allen Wrench
- Flat #2 Screwdriver
- 10mm Socket
- 13mm Socket
- Ratchet
- Ratchet Extension
- Push Pin Removal Tool



# '13-'14 Ford F-150 EcoBoost Charge Air Cooler Upgrade PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

PART NO.	DESCRIPTION	QTY.
<b>8N310-010 COOLER UPGRADE, F150 ECOBOOST 1</b>		
8PN001-007	CAC CORE, F150, COATED	1
7PS250-060	ELBOW, Ø2.50 X 60° SILICONE, BLK	2
7R005-015	CLAMP, T-BOLT, 200-74	4
7C060-013	M6 X 1.0 X 12MM FLG HD CL10.9+	1
7C060-022	M6 X 1.0 X 22MM SHCS LYSH SC	1
8N010-440	BLOCK-OFF PLT, BYPASS, '13 F150 CAC	1
8N020-180	INSTR. MAN, 2013 F150 CAC	1

## 1. PREPARATION & REMOVAL

NOTE: Make note of all fastener locations for future reassembly.

- A. Secure the vehicle on a lift, raise the hood & disconnect the battery. Refer to your vehicle owner's manual if you are unsure of where your vehicles lift points are located. You may do this installation without raising the vehicle, just be sure that the vehicle is on level surface with the gear selector in PARK & the parking brake engaged.
- B. Remove the lower rubber splash guard by removing the (8) plastic push pins & turning the (4) white plastic fasteners counter-clockwise. See Figs. 1-a & 1-b.
- C. Using a 13mm socket, remove the (2) screws securing the chin spoiler to the vehicle. There is (1) screw per side. See Figs. 1-c & 1-d.

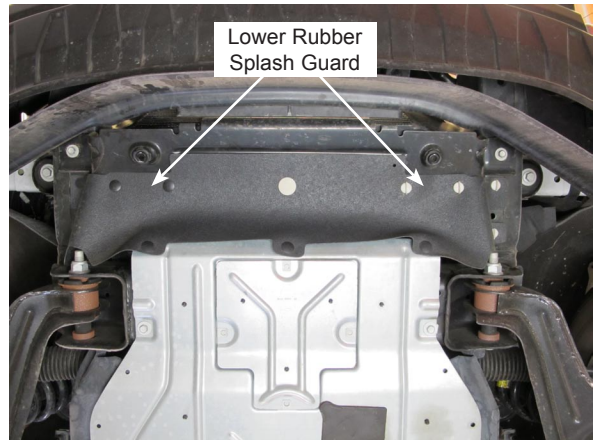


Fig. 1-a



Fig. 1-b (Splash guard removed)

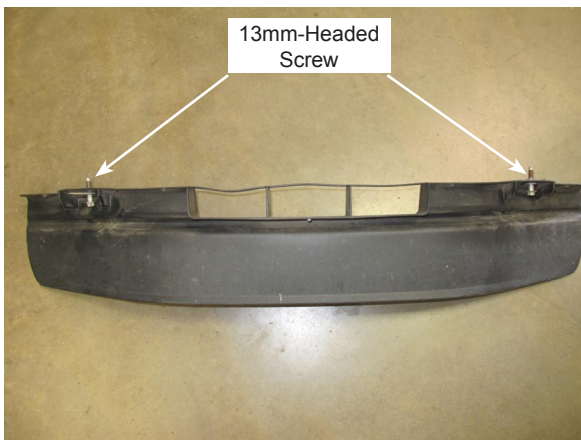


Fig. 1-d (Chin spoiler removed)

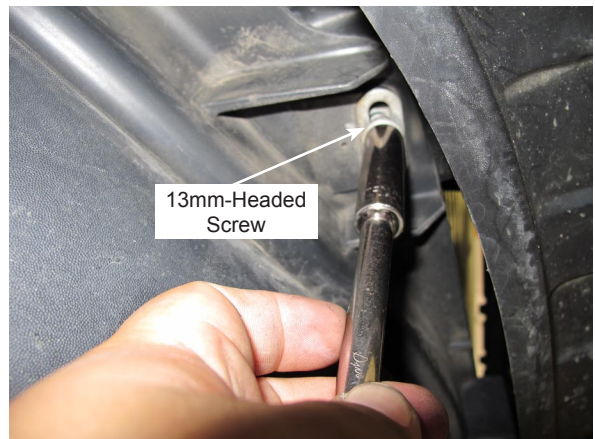


Fig. 1-c



## 1. PREPARATION & REMOVAL, cont'd

NOTE: Early-model vehicles do not have the bypass valve assembly attached to the cooler, therefore some steps will need to be skipped.

- D. Loosen the (4) hose clamps on the passenger side of the cooler using the 5/16 nut driver. Remove both silicone couplers & hose clamps. These will not be reused. See Fig. 1-e
- E. The driver's side discharge tube is secured by a snap ring. Using a small flathead screwdriver or pick, release the snap ring from the discharge tube, then pull the tube away from the cooler. See Fig. 1-f
- F. **NOTE: Early-model F-150 skip to Step G.** Locate the bypass valve tube. Turn the gray locking clip clockwise to release it from the bypass valve assembly & pull the tube away from the cooler. See Fig. 1-g



Fig. 1-e  
(Discard OEM couplers & hose clamps)



Fig. 1-f  
(Release snap ring & pull away)

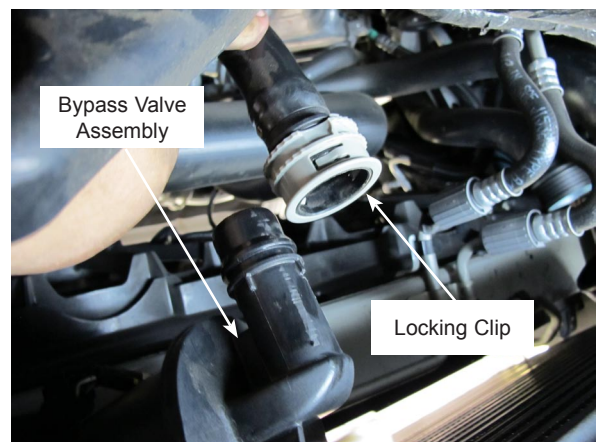


Fig. 1-g  
(Rotate clockwise & pull away)



## 1. PREPARATION & REMOVAL, cont'd

- G. Remove the (2) 10mm-headed screws from the upper cooler support bracket. Remove the upper cooler support bracket, (2) screws, (2) rubber grommets & set aside as they will be reused. See Fig. 1-h.
- H. **NOTE: Early-model F-150 skip to Step I.** Unplug the bypass valve connector located on the drivers side of the cooler. See Fig. 1-i
- I. Remove the (2) 13mm-headed screws from the lower cooler support bracket with the cooler attached, then lower the cooler from underneath the vehicle. Have an assistant help you with this step or use a floor jack to keep the cooler in place while you lower the cooler. Remove the (2) rubber grommets from the cooler & set aside as they will be reused. See Fig. 1-j & 1-k

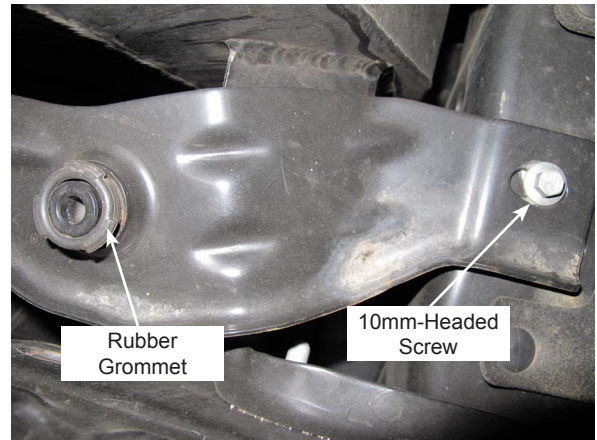


Fig. 1-h  
(Upper cooler support bracket. D. Side shown)

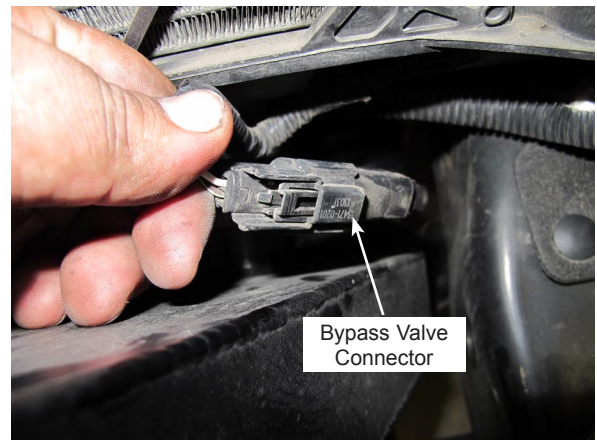


Fig. 1-i  
(Disconnect bypass valve connector)



Fig. 1-k  
(Lower cooler support bracket)

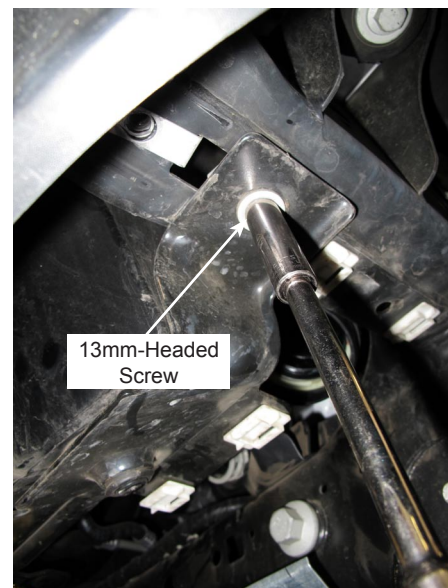


Fig. 1-j  
(Lower cooler support bracket. D. Side shown)

## 1. PREPARATION & REMOVAL, cont'd

### Steps J & K - Early-model vehicles only

- J. Early-model vehicles do not have the bypass valve assembly attached to the cooler. For this reason, we have provided a block-off plate with a fastener & o-ring. See Fig. 1-l.
- K. Prior to installation of the cooler, verify that the o-ring is in place & free of any damage. Lightly coat the o-ring with lubricant (white grease, etc.) prior to installation. Once verified, re-install the block-off plate to the cooler using the supplied fastener. See Fig. 1-m & 1-n.



Fig. 1-l  
(Block-off plate. Early-model only)

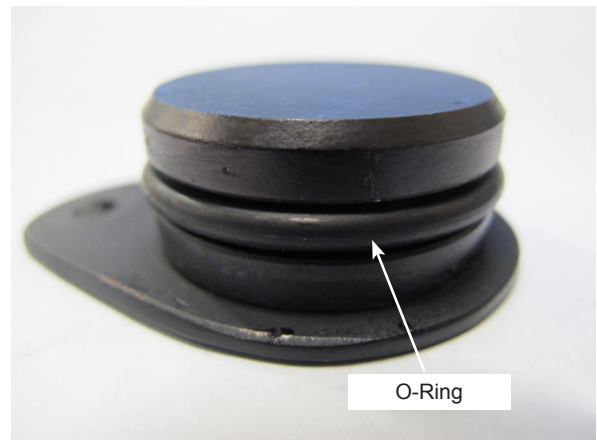


Fig. 1-m  
(Check o-ring)

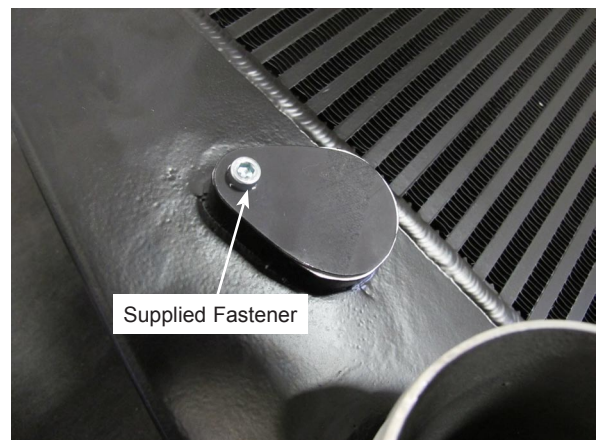


Fig. 1-n  
(Block-off plate installed. Early-model only)

## 1. PREPARATION & REMOVAL, cont'd

- L. Remove the bypass valve assembly from the cooler by removing the fastener securing the bottom of the assembly, then turning it counter-clockwise to release it from the bore. Be sure not to damage the o-ring on the valve. See Figs. 1-o & 1-p.
- M. Remove the block-off plate from the Vortech cooler. Transfer the bypass valve assembly to the new Vortech cooler & secure the bottom of the bypass valve assembly with the provided fastener. See Figs. 1-q & 1-r.

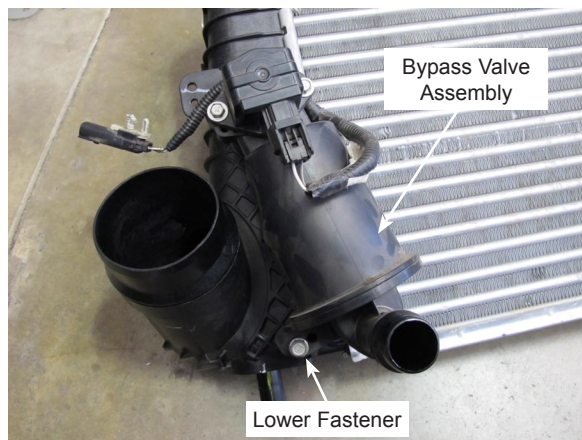


Fig. 1-o  
(Remove lower fastener)



Fig. 1-p  
(Turn counter-clockwise to release)



Fig. 1-r  
(Vortech cooler w/ bypass valve assembly)



Fig. 1-q  
(Vortech cooler w/ bypass valve assembly)



## 2. CHARGE AIR COOLER INSTALLATION

- A. Place (2) rubber grommets on the lower bosses of the Vortech cooler, then place the Vortech cooler onto the lower cooler support bracket. From underneath the vehicle, raise the Vortech cooler into position & loosely attach the previously removed lower cooler bracket screws to the vehicle. You may need an assistant to help raise the cooler, otherwise use a floor jack. See Fig. 2-a.

NOTE: When re-attaching the lower cooler support bracket, be sure to thread the screws into the 2 rear-most screw holes. . See Fig. 2-b.



Fig. 2-a  
(Position cooler from underneath)

- B. Place (2) rubber grommets on the upper bosses of the Vortech cooler. Position the upper cooler support bracket, then loosely attach the (2) previously removed 10mm-headed screws for the upper cooler support bracket. See Fig. 2-c.
- C. Once the cooler is in position & clear of any obstructions, secure all of the screws for both cooler support brackets.
- D. **NOTE: Early-model F-150 skip to Step E.** Reconnect bypass valve connector.

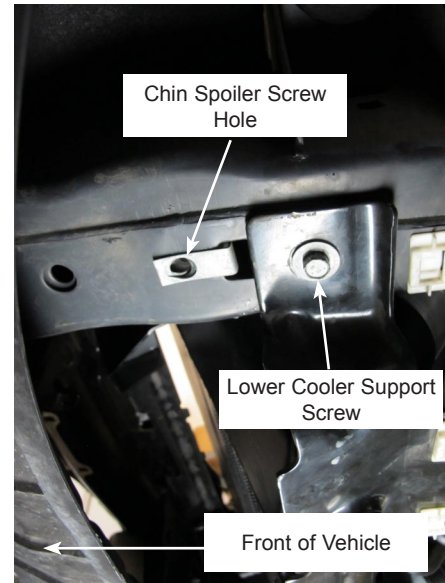


Fig. 2-b  
(Use rear-most screw holes)

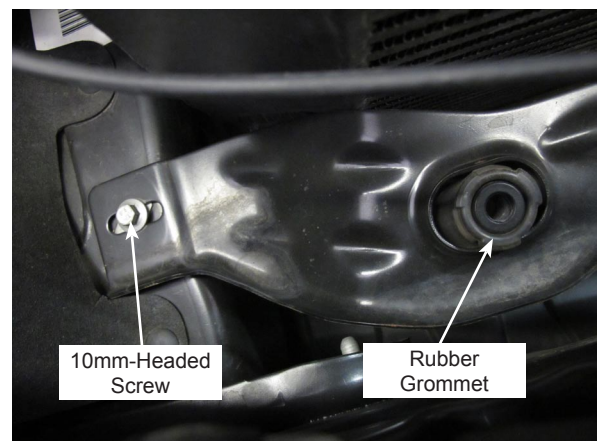


Fig. 2-c  
(Upper cooler support bracket. P. Side shown)

## 2. CHARGE AIR COOLER INSTALLATION, cont'd

- E. Locate the driver's sider discharge tube. Before attaching it to the Vortech cooler, be sure to place the snap ring back into its groove in the discharge tube. Once in place, you can slide the discharge tube onto the Vortech cooler. You will hear the snap ring click once it's locked in place. Lightly tug on the tube to verify that it is secure. See Figs. 2-d & 2-e.
- F. **NOTE: Early-model F-150 skip to Step G** Reattach the bypass valve tube by simply sliding it back onto the bypass valve assembly. You will hear a click once the tube is locked in place. See Fig. 2-f.
- G. Due to the increased size of the Vortech cooler, alternate discharge couplers have been supplied.

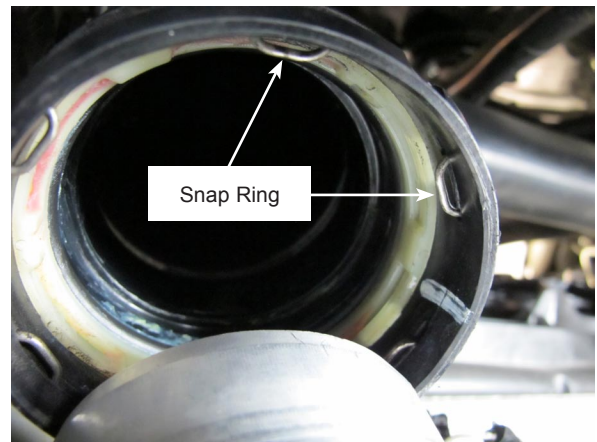


Fig. 2-d  
(Place snap ring back into discharge tube)

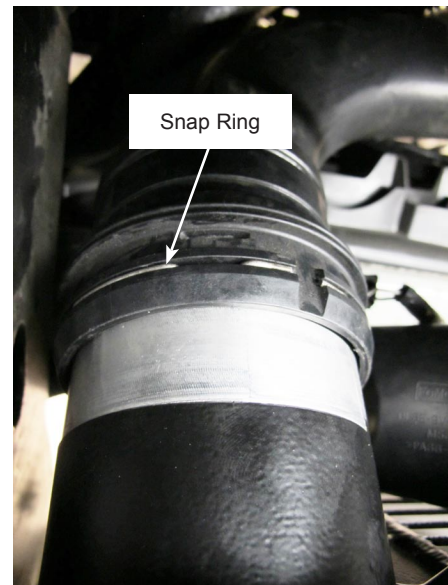


Fig. 2-e  
(Discharge tube reattached)

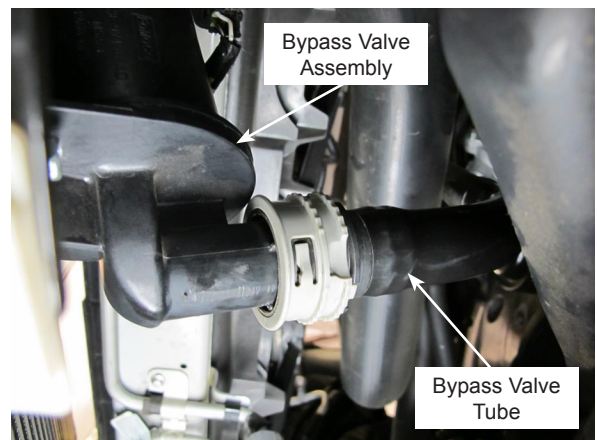


Fig. 2-f  
(Bypass valve tube reattached)

## 2. CHARGE AIR COOLER INSTALLATION, cont'd

- H. Locate the supplied silicone couplers & hose clamps. These will be used in place of the OEM silicone couplers & clamps. See Fig. 2-g.
- I. Install the silicone coupler closest to the top of the cooler first. Once in position, tighten both hose clamps. Repeat this step for the second silicone coupler. See Fig. 2-h.



Fig. 2-g  
(Supplied couplers & hose clamps)



Fig. 2-h  
(Installed couplers & hose clamps)



### 3. FINAL CHECK

**WARNING:** Do not attempt to operate the vehicle until all components are installed and all operations of this manual are completed, including the final check.

- A. Check all fasteners, silicone couplers and hose clamps for tightness and leaks.
- B. Make sure there are no loose wires or anything that may get damaged.
- C. Test drive the vehicle.
- D. Always listen carefully for engine detonation. Discontinue heavy throttle usage if detonation is heard.





**ENGINEERING, INC**

1650 Pacific Avenue, Channel Islands CA 93033-9901 • Phone: 805 247-0226  
Fax: 805 247-0669 • [www.vortechsuperchargers.com](http://www.vortechsuperchargers.com) • M-F 7:00AM - 3:30PM (PST)