



## **10-RIB BELT SYSTEM UPGRADE INSTALLATION MANUAL**

**2011 AND UP FORD MUSTANG GT 5.0L COYOTE**



### **WHIPPLE SUPERCHARGERS**

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### **NOTICE**

**INSTALLATION OF THE 10-RIB SYSTEM WILL VOID ANY WHIPPLE POWERTRAIN WARRANTY.**

## **INTRODUCTION**

Please read the installation manual and verify that all items are present. If you are missing hardware or have any questions, please contact your dealer or Whipple Superchargers.

**COMPETITION BASED PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION (VISIT THE "EMISSIONS" PAGE AT [HTTP://WWW.SEMASAN.COM/EMISSIONS](http://www.semasan.com/emissions) FOR STATE BY STATE DETAILS.**

**COMPETITION BASED PRODUCT IS LEGAL IN CALIFORNIA ONLY FOR RACING VEHICLES WHICH MAY NEVER BE USED, OR REGISTERED OR LICENSED FOR USE, UPON A HIGHWAY.**

**IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.**

## **RECOMMENDED TOOLS AND SUPPLIES**

The following items are not included in this supercharger kit and it is strongly recommended that they're used for ease of installation or maximum performance:

### **Torque Wrench**

3/8" and 1/2" torque wrenches are required during installation.

### **Tools**

Safety glasses, 3/8", 1/2" assorted metric socket set, 5mm ball head allen, 1/2" breaker bar, puller set.

### **Clean Shop Towels**

Use these to keep the installation area clean.

## **SAFETY PRECAUTIONS**



**CAREFULLY READ THE IMPORTANT SAFETY PRECAUTIONS AND WARNINGS BEFORE PROCEEDING WITH THE INSTALLATION!**

Appropriate disassembly, assembly methods and procedures are essential to ensure the personal safety of the individual performing the kit installation. Improper installation due to the failure to correctly follow these instructions could cause personally injury or death. Read each step of the installation manual carefully before starting the installation.

- Always wear safety glasses for eye protection.
- Place the ignition switch in the off position.
- Always apply the parking brake when working on vehicle.
- Block the front and rear tire surfaces to prevent unexpected vehicle movement.
- Operate the engine only in well-ventilated areas to avoid exposure to carbon monoxide.
- Do not smoke or use flammable items near or around fuel system.
- Use chemicals and cleaners only in well-ventilated areas.
- Batteries can produce explosive hydrogen gas which can cause personal injury. Do not allow flames, sparks or flammable sources to come near the battery.
- Keep hands and any other objects away from the radiator fan blades.
- Keep yourself and your clothing away from moving parts when the engine is running.
- Do not wear loose clothing or jewelry that can be caught in rotating or moving parts.

## GLOSSARY OF TERMS

ABBREVIATION	DESCRIPTION
ACT	Air Charger Temperature
DTC	Diagnostic Trouble Code
ECT	Engine Coolant Temperature
EGR	Exhaust Gas Recirculation
ETC	Electronic Throttle Control
EVAP	Evaporative emissions system
FHSCS	Flat Head Socket Cap Screw
IAT	Inlet Air Temperature
IC	Intercooler
ID	Internal Diameter
LB-IN	Pound-force inch
LB-FT	Pound-force foot
LTR	Low temp radiator
MAF	Mass Air Flow
MAP	Manifold Absolute Pressure
MY	Model Year
OBD	On Board Diagnostics
OD	Outside Diameter
PCV	Positive Crankcase Ventilation
PSI	Pound per Square Inch
SC	Supercharger
SHCS	Socket Head Cap Screw
TPS	Throttle Pressure Sensor
TRQ	Torque



**\*\*NOTICE:** Installation of Whipple Supercharger products signifies that you have read this document and have agreed to the terms stated within.

It's the purchaser's responsibility to follow all installation instruction guidelines and safety procedures supplied with the product as it's received by the purchaser to determine the compatibility of the product with the vehicle or the device the purchaser intends to install the product on.

Whipple Superchargers assumes no responsibility for damages occurring from accident, misuse, abuse, improper installation, improper operation, lack of reasonable care or all previously stated reasons resulting from incompatibility with other manufacturer's products.

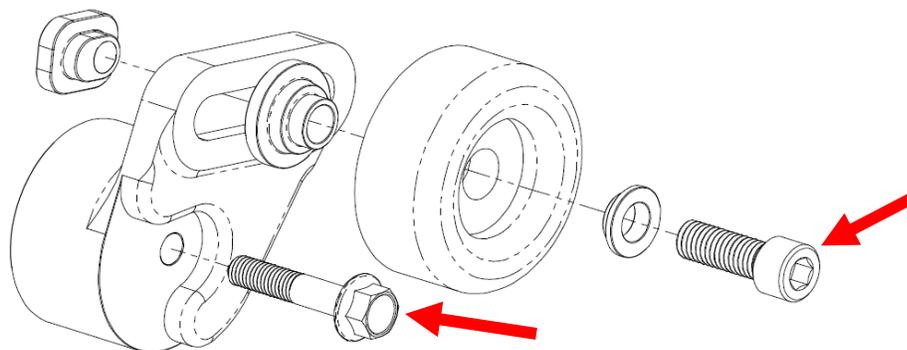
There are no warranties expressed or implied for engine failure or damage to the vehicle in any way, loss of use or inconvenience or labor reimbursement. This includes merchantability and fitness.

The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. Whipple Superchargers reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

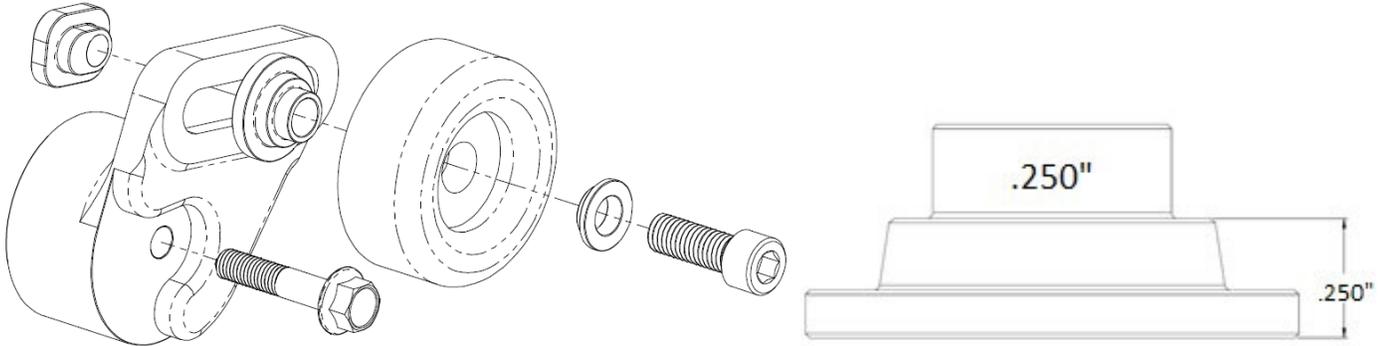
## 10-RIB BELT SYSTEM INSTALLATION INSTRUCTIONS

It is strongly recommended that you read through this guide **before** you begin installing the 10-Rib upgrade.

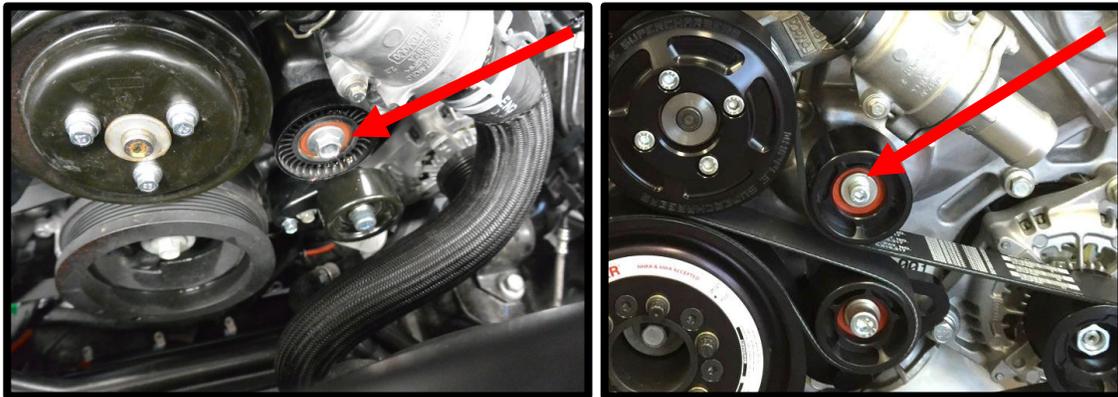
1. Using an air hose, blow off any loose dirt or debris from engine compartment. If really dirty, then steam clean the engine compartment before proceeding to the next step.
2. Lift the front of the vehicle using the Ford recommended lifting points and place on to safety stands.
3. Loosen the factory water pump pulley, do not remove until after removing the belt.
4. Remove the supercharger pulley by removing the (4) 6mm x 12mm SHCS. To remove, loosen the (4) 6mm bolts but do not remove. Use a 1/2" breaker bar to loosen the tension on the spring loaded tensioner. Remove the SC belt. Remove the (4) 6mm x 12mm SHCS.
5. Remove the water pump pulley from the engine.
6. Remove the spring loaded tensioner from the Whipple idler bracket, this will not be reused.
7. Remove the alternator pulley from the alternator by removing the factory nut.
8. Using a puller, remove the factory balancer from the engine.
9. Install the supplied ATI hub using a long reach installer or the supplied 12mm x 130mm bolt and washer from the ARP bolt kit.
10. Install the supplied ATI balancer to the ATI hub and torque to the ATI specs (*use supplied ATI manual*). Use the supplied ARP #156-2502 12mm bolt and washer to secure balancer to engine. **\*NOTE: Failure to hone and install ATI hub correctly will cause alignment issues and add unwanted stress to crankshaft.**
11. Remove the adjustable idler pulley and step spacer from the adjustable idler arm by removing the 1/2"-13 x 2 1/4" SHCS. \*If new install, secure adjustable idler bracket to stock tensioner location using the supplied 10mm x 55mm SHCS. Torque to 35 lb-ft.



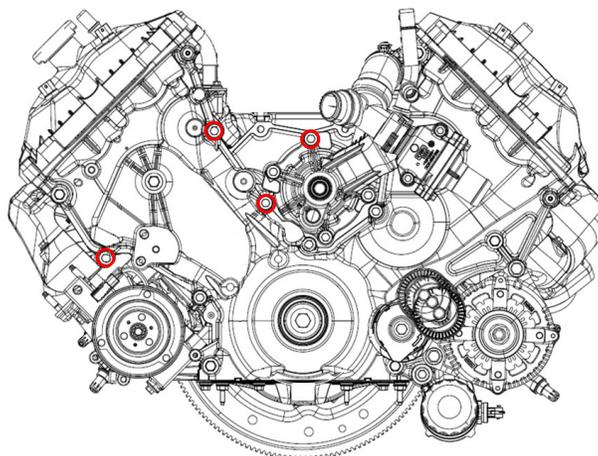
12. Install the supplied billet 10-rib smooth idler pulley (#3102146) to the adjustable idler position using the supplied .250" step spacer against the adjustable idler arm (snap ring faces the engine). Sandwich the billet smooth idler pulley to the step spacer and the supplied step washer to front side of idler. Install the supplied "tee" nut to the back side with the offset hole facing the driver side. Secure with the supplied 1/2"-13 x 2 1/4" SHCS and torque to 30 lbs-ft. Use light amount of anti-seize on threads.



13. Remove the 6-rib smooth idler pulley from the engine. Replace with the supplied 10-rib "DEEP BORE" billet smooth idler pulley with the .260" back spacing to the factory location (PN #3102271), with the snap ring facing the engine. Use the supplied 8mm x 35mm SHCS with the **8mm step washer** to secure. Torque to 22 lbs-ft. **NOTE: This pulley is different spacing than all other pulleys supplied, it does NOT use a step spacer.**



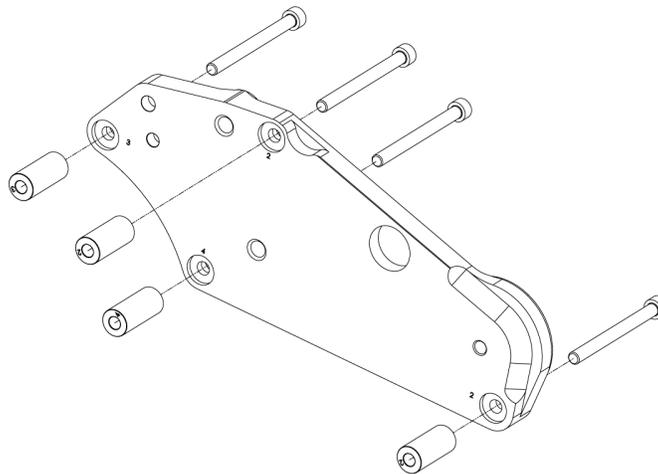
14. Using a 10mm socket, remove the (3) factory fasteners from the timing chain to head cover and (1) from water pump (for new idler plate).



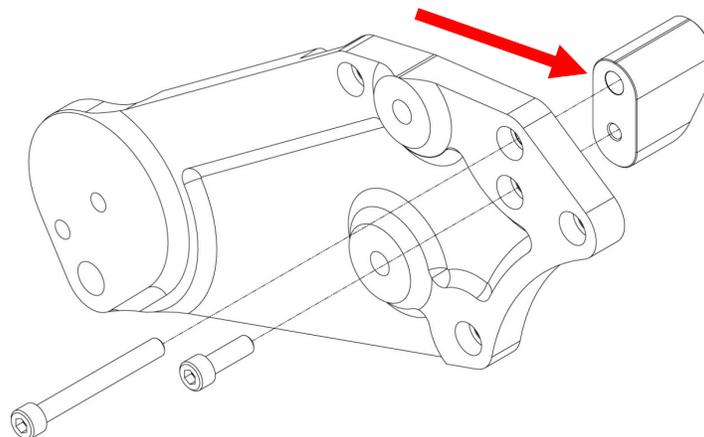
15. Install the (4) support stands to the front idler plate. These are loose fit; therefore, you must tilt backwards during installation or the stands will fall. You can use masking tape to help hold in place during installation if installation becomes difficult. **Each support stand is marked with an identifying number, as well as the idler plate for ease of placement. TIP:** Assemble together with the number facing out for future reference.



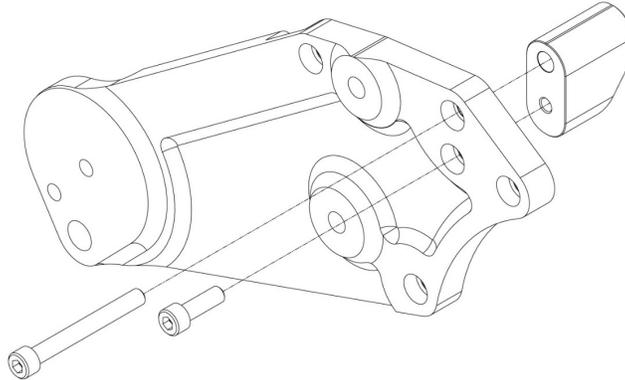
16. Use the supplied (4) 8mm x 90mm SHCS to secure the idler plate to the front of the passenger side of engine, install hand tight. Using a 6mm allen, torque to 22 lbs-ft.



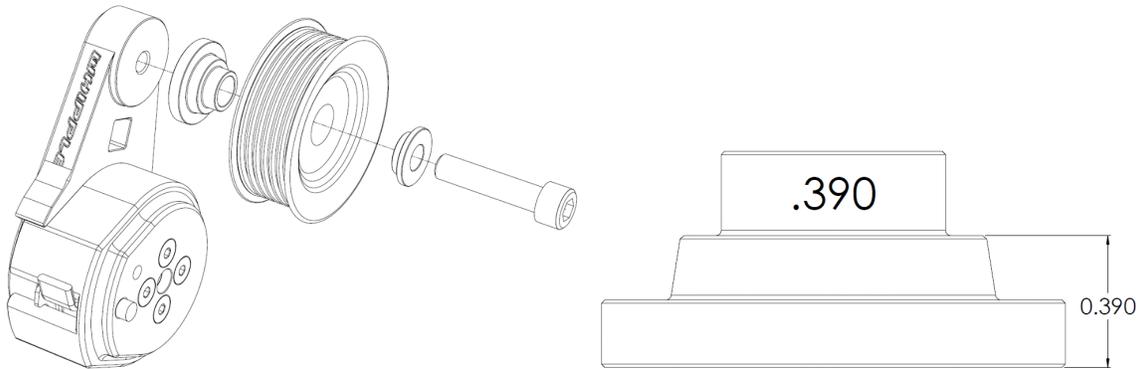
17. Preinstall the supercharger support bracket by installing on the back of the idler plate. Secure with the (1) 8mm x 70mm SHCS and (1) 8mm x 25mm SHCS, leave loose until supercharger assembly.



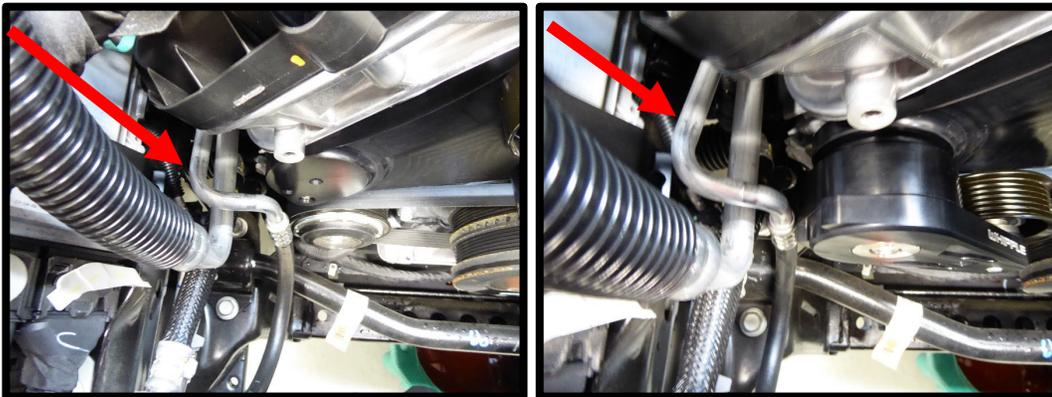
18. Using a 6mm allen socket, secure the (1) 8mm x 70mm SHCS and (1) 8mm x 25mm HSCS to the front support bracket. Torque to 22 lbs-ft. NOTE: If there is a fitment issue to SC inlet here, you will need to loosen the (10) supercharger to cylinder head bolts to relieve SC, torque inlet to plate and then retorque supercharger to heads.



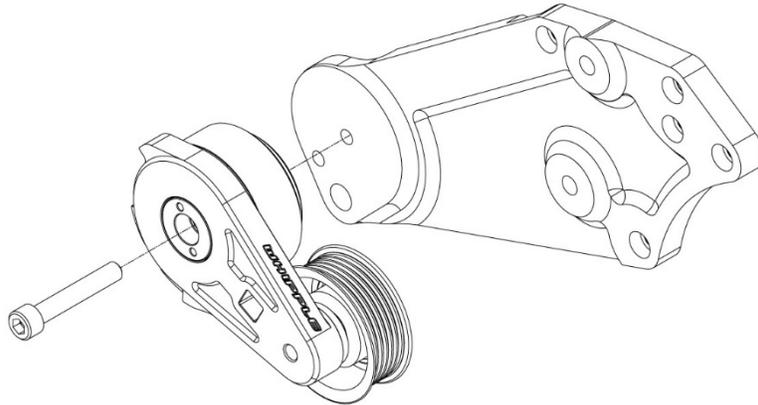
19. Assemble the spring-loaded tensioner by mounting the supplied spacer with the female register to the tensioner. Install the grooved idler pulley to the tensioner and (.390") step spacer. Use the supplied step washer to center the bearing and the 10mm x 50mm HEX bolt to secure idler to tensioner. Use light amount of anti-seize on threads. Torque to 18 lbs-ft.



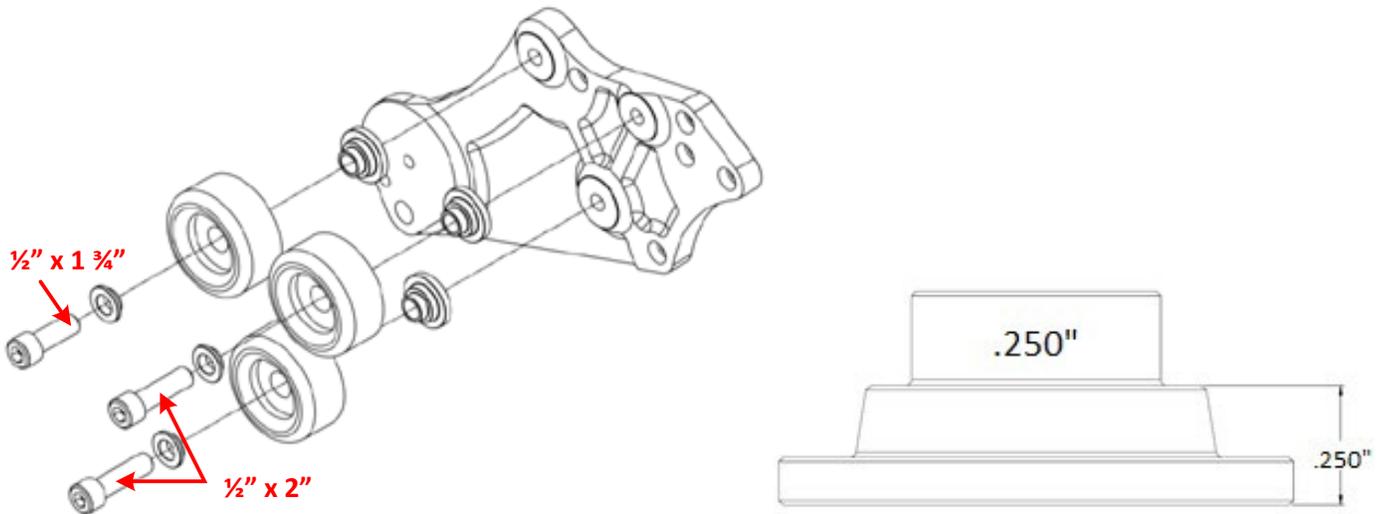
20. Carefully bend the factory AC line down and towards passenger side. Install spring loaded tensioner to plate to check clearance. You should have a minimum of 3/8" of clearance from the tensioner to the AC line.



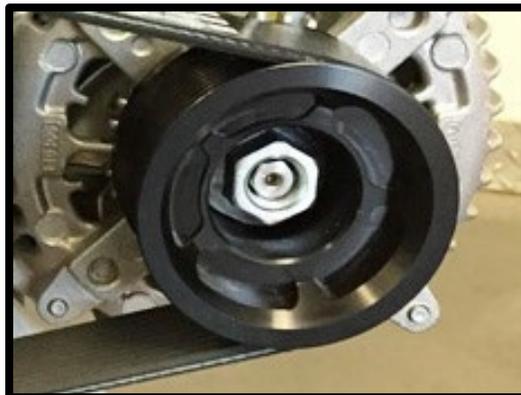
21. Install the spring-loaded tensioner to idler plate, locating the tang into position. Secure with the supplied (1) 10mm x 60mm SHCS. Use light amount of anti-seize on threads. Torque to 25 lbs-ft.



22. Install the supplied (3) smooth aluminum deep bore (.260" back spacing) idler pulleys (PN #3102271) to the idler plate using the (3) (.250") step spacers (snap ring faces the engine). Sandwich the idler pulley to the (3) (.250") step spacer using the supplied (3) step washers, (2) 1/2"-13 x 2" and (1) 1/2"-13 x 1 3/4" SHCS. Use light amount of anti-seize on threads. Torque to 30 lbs-ft. using a 3/8" allen socket.



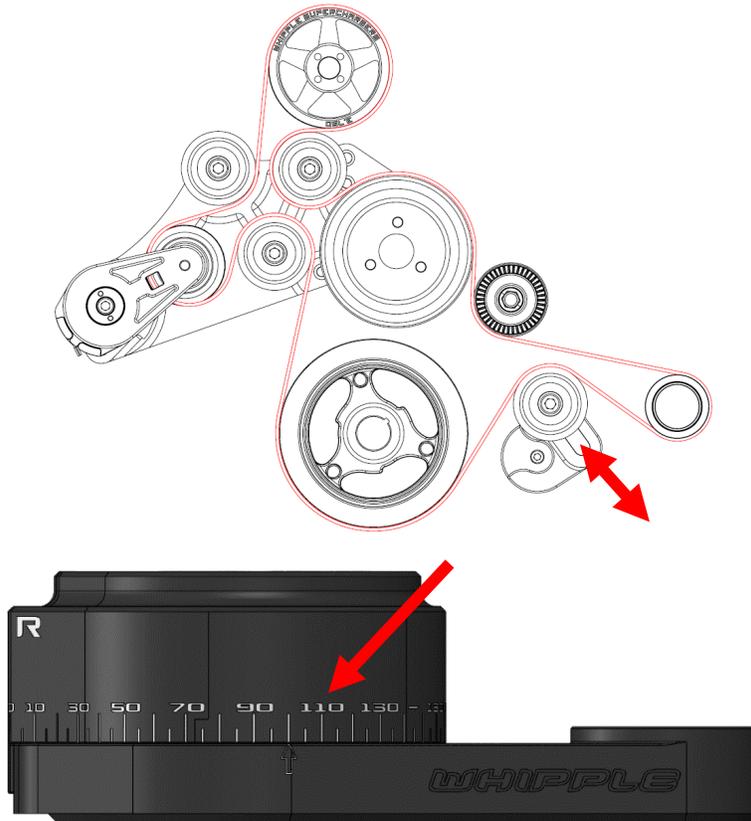
23. Install the supplied billet 10-rib grooved alternator pulley and secure using the supplied steel nut.



24. Install the supplied 10-rib water pump pulley. (15-17) Use the supplied (3) 8mm x 20mm SHCS. (11-14) Use the supplied (4) 8mm x 20mm SHCS. Torque to 14 ft-lbs.



25. Install the supercharger pulley using the supplied 6mm SHCS using a 5mm allen socket. Leave hand tight until belt installation. Rotate each pulley by hand to verify each rotates freely.
26. Install the supplied supercharger belt by following the routing diagram. Once in position, lock the adjustable idler pulley by torquing the SHCS to 30 lbs-ft. **NOTE:** Set the tensioner position so the arrow points to **100** (80%-85% travel) by removing slack via the adjustable idler pulley. If setup at max open position, the tensioner will consistently hit its stop. If setup near its full close position, then the tensioner will not continue to apply torque to the belt during belt stretch and will allow it to jump or walk.



27. Torque the supercharger SHCS bolts to 130 lbs-in using a 5mm allen socket.
28. Inspect belt system, readjust if necessary. It's common for the belt to stretch after first use.

29. After the initial test drive, go through the belt tensioner process again. When next you start driving, gradually work the vehicle to wide open throttle runs. Listen for any engine detonation (pinging). If engine detonation is present, let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank.
30. If you have questions about your vehicle's performance, please check with your installation facility or call Whipple Superchargers at 559.442.1261, Monday through Friday from 8am to 5:00pm, pacific time or email questions to [tech@whipplesuperchargers.com](mailto:tech@whipplesuperchargers.com).

<b>PULLEY/BELT LENGTH GUIDE</b>		
<b>SC Pulley</b>	<b>Stock Balancer</b>	<b>20% Balancer</b>
4.000"	82.5"	87.0"
3.875"	82.0"	87.0"
3.750"	82.0"	86.4"
3.625"	82.0"	86.4"
3.500"	81.5"	86.4"
3.375"	81.5"	85.4"
3.250"	81.0"	85.4"
3.125"	81.0"	85.2"
3.000"	80.6"	85.2"
2.875"	80.6"	84.0"
2.750"	80.6"	84.0"

<b>PULLEY/BOOST/132MM TB</b>		
<b>SC Pulley</b>	<b>Stock Balancer</b>	<b>20% Balancer</b>
4.000"	10	15
3.875"	11	16
3.750"	12	17
3.625"	13	18
3.500"	14	19
3.375"	15	20
3.250"	16	21
3.125"	17	22
3.000"	18	23
2.875"	19	24
2.750"	20	25

<b>PULLEY/BOOST/STOCK TB</b>		
<b>SC Pulley</b>	<b>Stock Balancer</b>	<b>20% Balancer</b>
4.000"	9	N/A
3.875"	10	N/A
3.750"	11	N/A
3.625"	12	N/A
3.500"	13	N/A
3.375"	N/A	N/A
3.250"	N/A	N/A
3.125"	N/A	N/A
3.000"	N/A	N/A
2.875"	N/A	N/A
2.750"	N/A	N/A

<b>BELT OPTION GUIDE</b>		
<b>6-Rib</b>	<b>10-Rib</b>	<b>10-Rib (20%)</b>
K060825	K100822HD	K100870HD
K060824	K100818HD	K100864HD
K060820	K100816HD	K100864
K060815	K100816	K100860HD
K060812HD	K100814HD	K100852HD
K060810	K100810HD	K100852
K060806HD	K100810	K100840