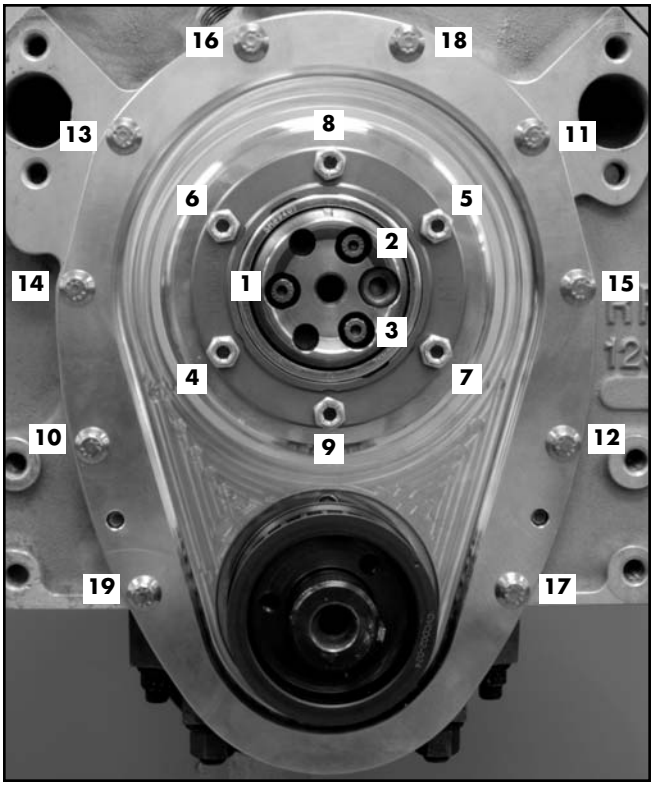
INSTALLATION INSTRUCTIONS:
ELITE-SERIES SMALL BLOCK CHEVY
CAMSHAFT BELT DRIVE KITS
XTS90000 through XTS90009

XCELDYNE TIMING SYSTEMS

42 High Tech Blvd, Thomasville, NC 27360 - 800.448.1223 toll free, 336.472.2242 phone, 336.472.2204 fax - www.cvproducts.com

BILL OF MATERIALS

Part #	Quantity	Description
Varies by kit	1	SBC billet back cover, STD cam, SBC snout, grooved rail
XTC11000A	1	SBC cam pulley, STD cam, 56-tooth
Varies by kit	1	Crankshaft pulley, SBC, 28-tooth
Varies by kit	1	SBC cam spider, STD cam for 56-tooth pulleys
XTC14000	1	Balanced low-drag SBC cam thrust bearing assembly
XTC15009	3	ARP camshaft bolt
XTC15010	1	ARP timing hub bolt ($^{7}/_{16}$ -20 LH)
XTC15011	1	Spider retaining washer
XTC15012	1	Woodruff key, $^{1}/_{8}$" x $^{1}/_{2}$"
XTC15013	6	Flexlock nut, thin, $^{1}/_{4}$ - 20
XTC15020	6	ARP press-in stud for all XTC billet back covers
XTC15031	4	Low-head socket head cap screw $^{5}/_{16}$ - 24 x $^{3}/_{4}$"
XTC15037	4	ARP 12-point flange nuts $^{5}/_{16}$ - 24
XTC15040	3	Button head cap screw, 8-32 x .1875"
XTC15050	10	ARP 12-point bolt $^{1}/_{4}$ - 20 x $^{3}/_{4}$"
XTC16000	1	Cam seal with single lip
XTC16005	1	O-ring for billet back cover
XTC18000	1	Timing belt, fits XTS90000 through XTS90009 cam drives
STS86587	1	Crank seal, all SBC



TORQUING SEQUENCE

Bolts 1-3: Thrust bearing to camshaft, 28 lbs/ft with Red Loctite
Nuts 4-9: Thrust bearing to back cover, 10 lbs/ft, no threadlocker
Bolts 10-19: Back cover to block, 10 lbs/ft Blue Loctite

OPTIONAL ACCESSORIES

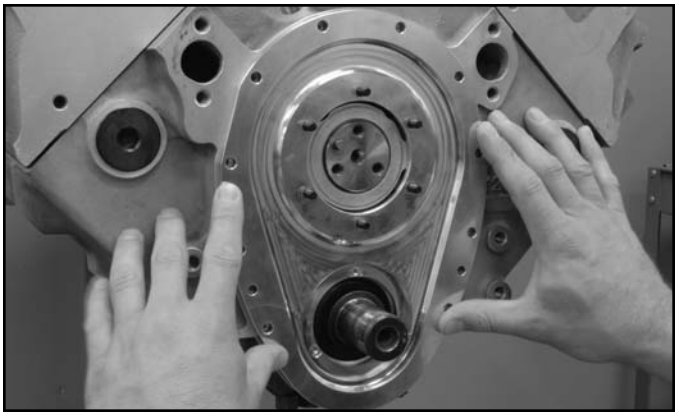
Part #	Description
XTC15014	Forward shim[1], .005"
XTC15015	Forward shim[1], .010"
BLP6078-010	Rear shim[2], .010"
BLP6078-015	Rear shim[2], .015"
BLP6078-020	Rear shim[2], .020"
XTC19000	Stamped aluminum dust cover
XTC19002	Fabricated aluminum dust cover
XTC 19005	Billet aluminum dust cover
Refer to CV Products catalog	CV timing pointer
Refer to CV Products catalog	Water pump spacer
CVT-CD1	Cam seal installation tool
CVT-CD2	Crank pulley installation tool
CVT-CD3	Cam drive spanner

NOTES:

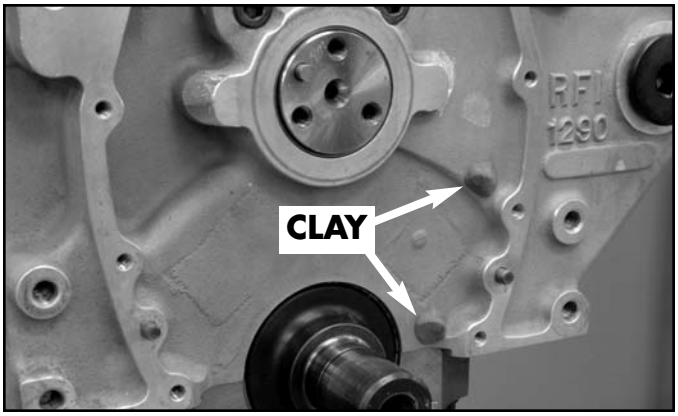
1 - Moves cam forward, towards front of engine
2 - Moves cam rearward, away from front of engine

CV PRODUCTS®

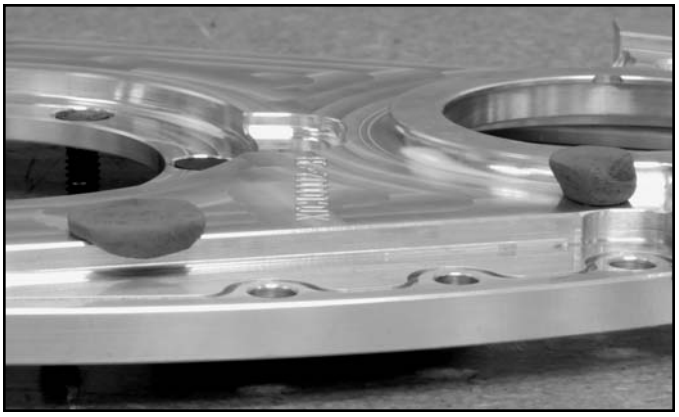
MADE IN THE USA



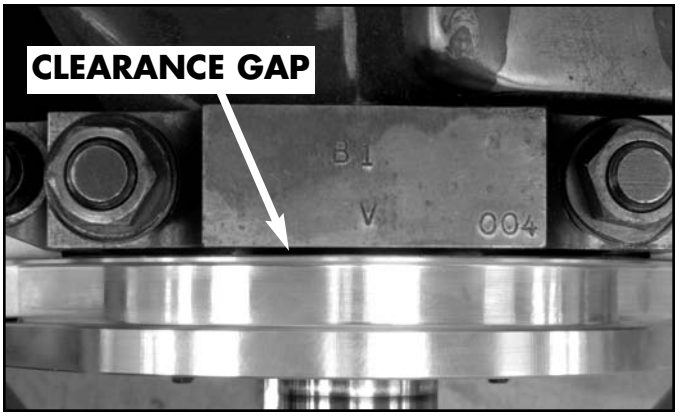
STEP 1: To begin, trial-fit the billet back cover to your engine block. Tolerances will vary between aftermarket block manufacturers, so some clearancing of the block may be necessary. Should this be the case with your engine, remove material from the block ***NOT*** from the back cover.



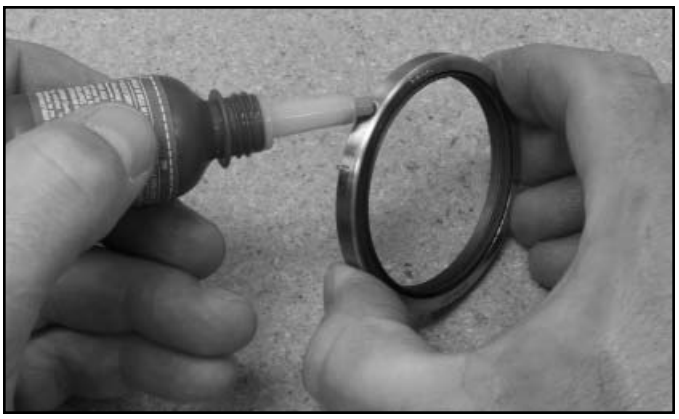
STEP 2: Next, check for clearance between the back cover and engine block to allow proper oil drainback. Place a small piece of clay on the highest points on the block as shown here (for example only, block designs will vary).



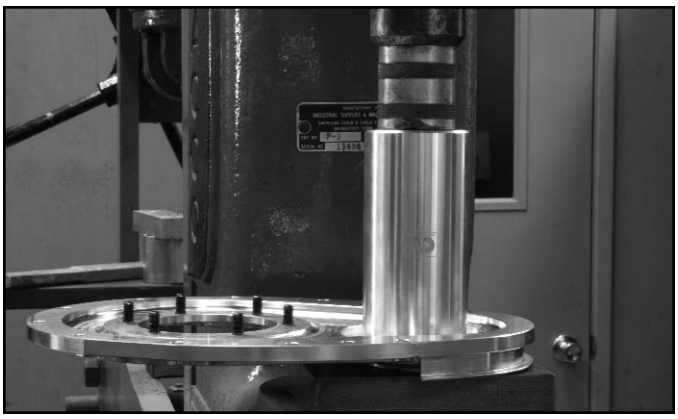
STEP 3: Place the back cover on the block and press against the clay. Remove the cover and inspect the clay to determine the amount of clearance between your block and the cover. Should you need to add clearance, remove material from the block ***NOT*** from the back cover.



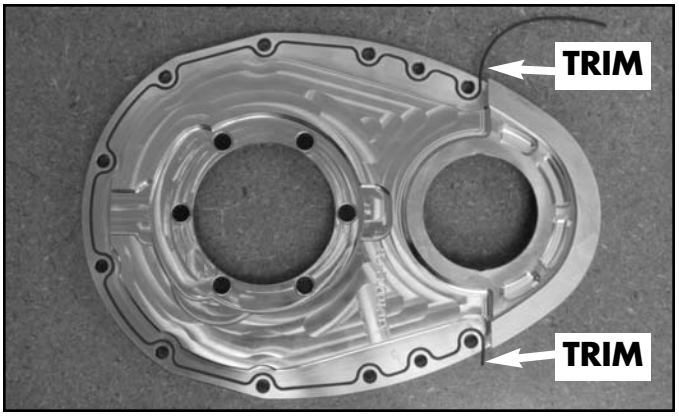
STEP 4: Proper oil drainback also depends on some clearance between the front main cap and back cover. Any amount of clearance is acceptable, such as shown here. Should you need to add clearance, ball mill a vertical slot in the main cap, ***NOT*** from the back cover.



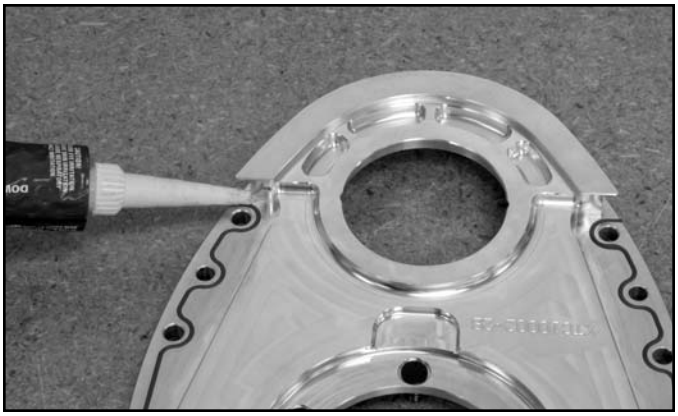
STEP 5: Prior to installing the crankshaft seal, apply a thin, uniform coating of Loctite 272 Red to the outside diameter of the seal.



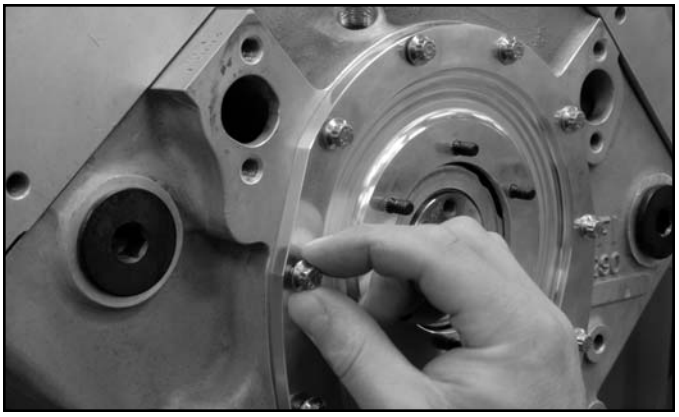
STEP 6: Press the crankshaft seal into the back cover using optional CV seal installer or similar tool. Finish the seal installation by screwing in the 3 button head cap screws provided in this kit using Loctite 242 Blue on the threads.



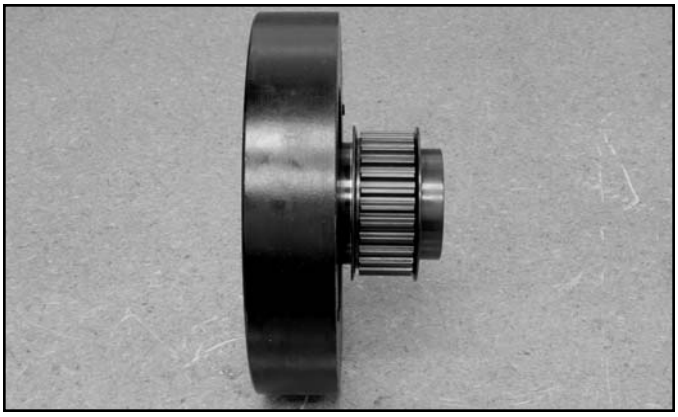
STEP 7: Work the o-ring cord into the dovetail groove on the back side of the cover as shown here. Trim off the excess cord flush with the end of the cover. ***NOTE:*** *Do not use silicone sealer except as directed in* ***STEP 8****.*



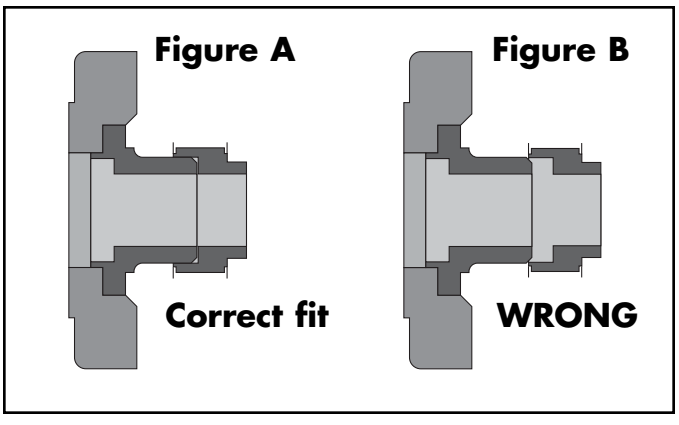
STEP 8: Apply a thin bead of silicone along the cover as shown. The bead should go from the o-ring to the pan seal flange.



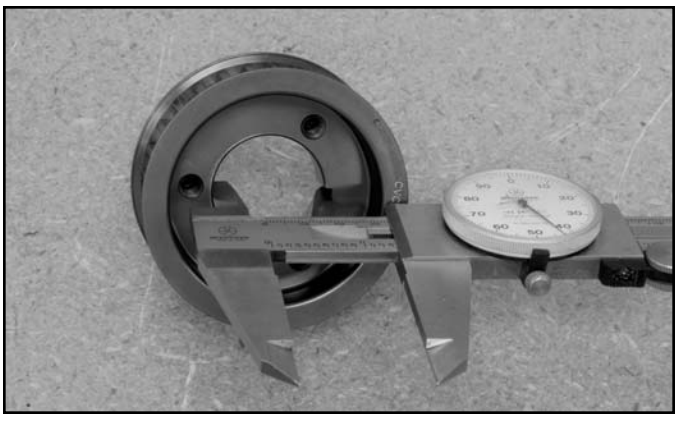
STEP 9: Install the back cover using the ARP $^{1}/_{4}$ - 20 12-point bolts provided in this kit. Bolts should only be finger tight at this step. This cover is o-ring sealed, ***DO NOT*** use a gasket when installing this cover.



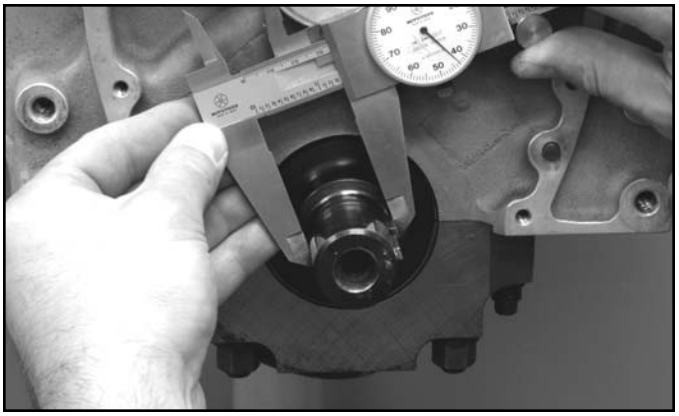
STEP 10: The crankshaft pulley should freely slide over and bottom out on your balancer hub. Due to varying tolerances between manufacturers, it is highly recommended that this fit is checked prior to installation of the belt drive.



STEP 11: Should there be any interference in the fit of the balancer hub (shown in Figure B, exaggerated for detail) the hub OD will need to be polished or machined accordingly. Fit should be 'slip-on' with no resistance as shown in Figure A



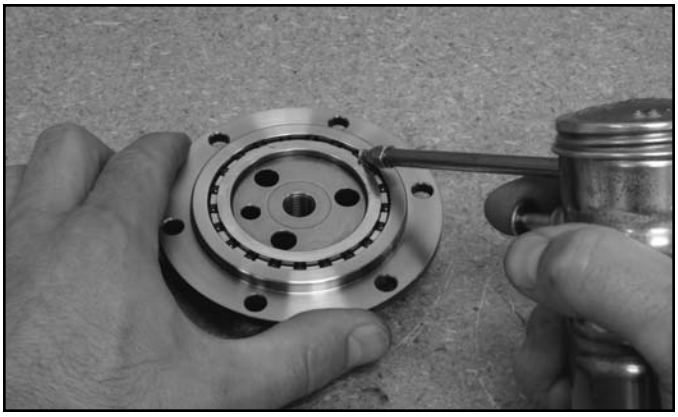
STEP 12: Prior to installing the crankshaft pulley, measure from the ID to the depth of the keyway as shown. Record this number.



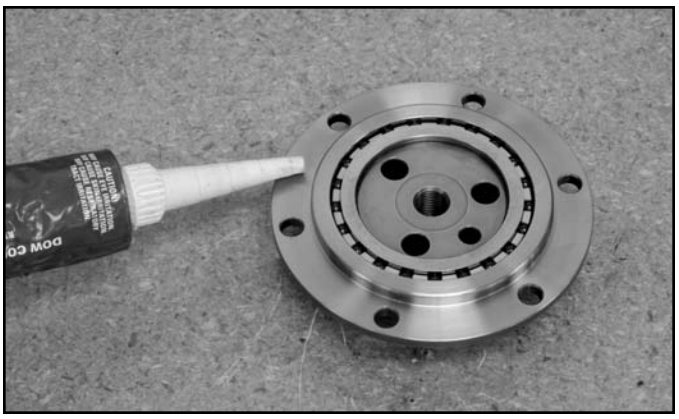
STEP 13: Now measure the crankshaft snout from the OD to the drive key as shown. If this measurement is larger than the measurement taken in **STEP 12**, file down the key and re-measure. Failure to verify these measurements could result in severe damage to the crankshaft pulley and/or crankshaft snout.

STEP 14: Using your thumb or finger trace the ID of the seal while applying mild pressure. this relaxes the seal allowing for easier installation of the crankshaft pulley.

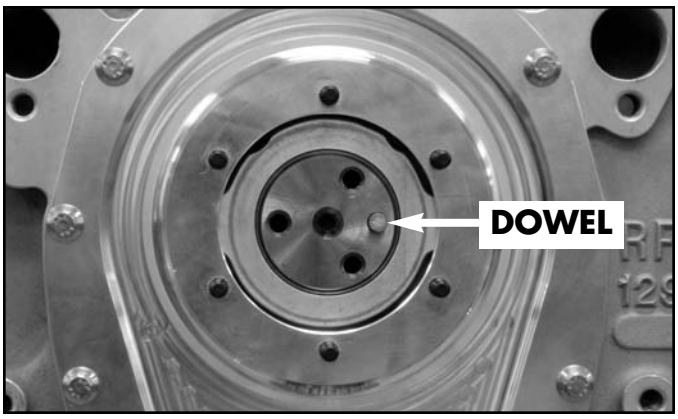
STEP 15: Install the crankshaft pulley using a balancer installation tool in conjunction with CV tool #CVT-CD2 as shown. ***<u>DO NOT</u> install the crankshaft pulley with a hammer or other such tool.***



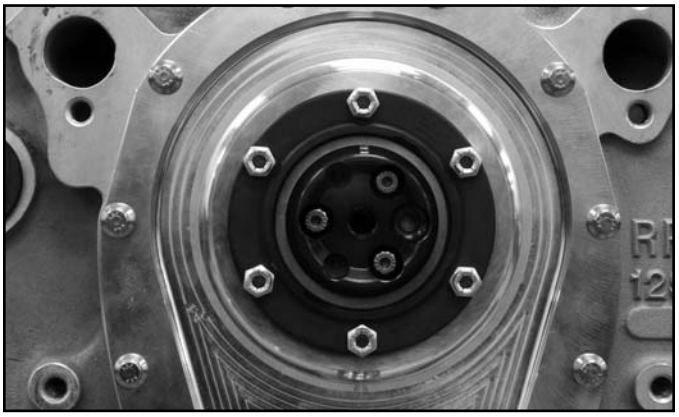
STEP 16: Thoroughly clean the cam thrust bearing assembly to remove all of the anti-rust agent from the assembly. Blow dry and lubricate the bearing with motor oil, rotating the thrust bearing to work the oil in evenly.



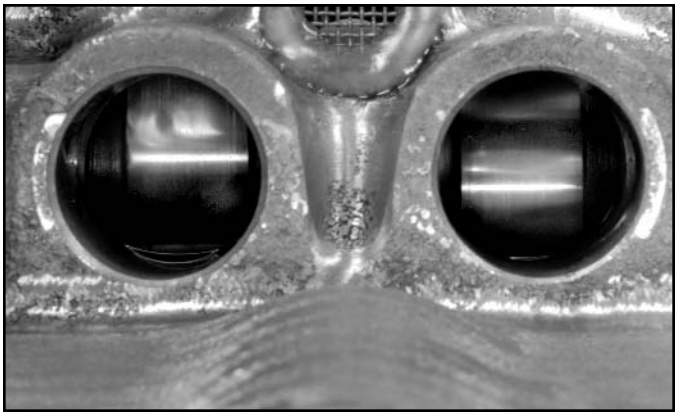
STEP 17: Apply a thin bead of silicone to the flange of the camshaft thrust bearing assembly and smooth it out evenly with your finger.



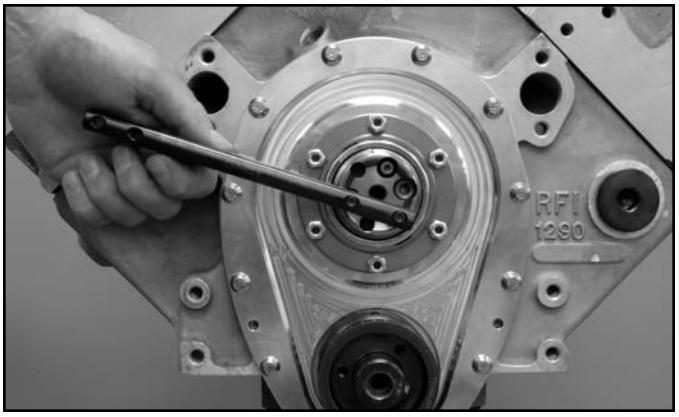
STEP 18: Before the camshaft bearing assembly is installed, rotate the camshaft until the dowel pin is in the 3 o'clock position.



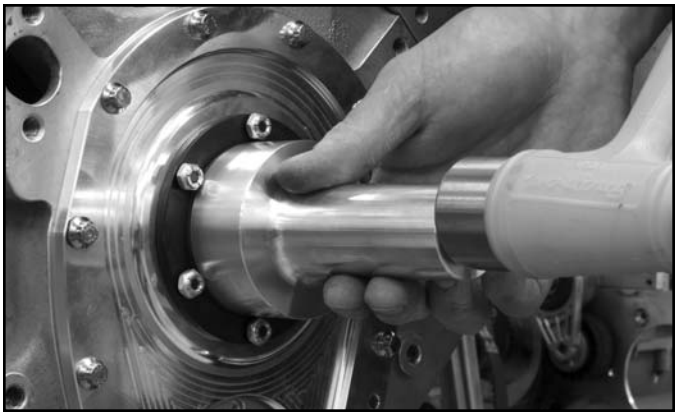
STEP 19: Place the camshaft thrust bearing assembly on the back cover. Install the three ARP $^{5}/_{16}$ - 18 12-point bolts in the cam, then the six outer locknuts on the back cover studs as shown. Cam bolts and lock nuts should only be finger tight at this step.



STEP 20: Verify camshaft alignment at this step. Alignment shims are available separately from CV Products to move the cam back, towards the rear of the engine in .010", .015" and.020" increments. Shims are available to move the cam forward in .010" increments. See front page of these instructions for ordering information.

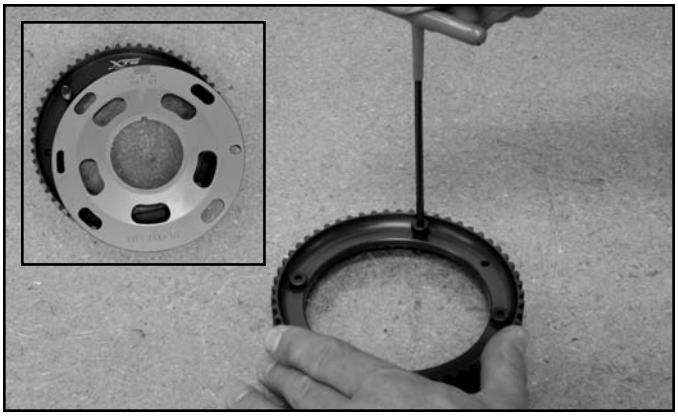


STEP 21: Follow the torquing sequence shown on the front page of these instructions and tighten all bolts and nuts in order, then repeat the procedure torquing them to the values listed. ***IMPORTANT -*** Using the optional spanner, CV tool #CVT-CD3 rotate the camshaft while tightening/torquing ***EACH*** bolt and nut.

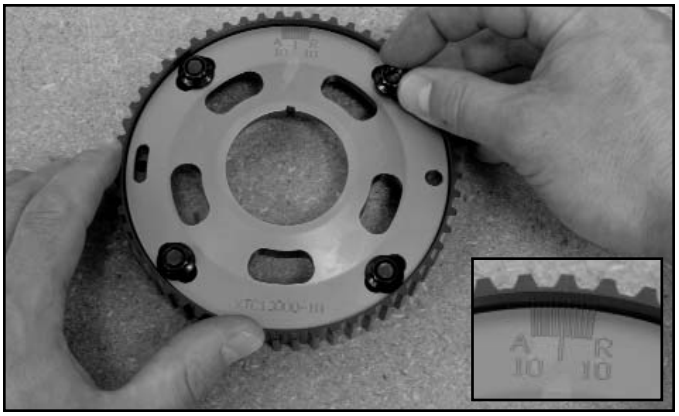


STEP 22: Apply Loctite 271 Red to the outer diameter of the seal as shown in ***STEP 3***, then gently slide the seal up the taper of the camshaft adaptor hat until it makes contact with the seal plate. Using optional CV tool #CVT-CD1, tap the seal in place until the top of the seal is flush with the camshaft seal plate.

STEP 23: Fill the two notches in the cam thrust bearing assembly with silicone ***(ARROWS)***. These notches allow removal of the cam seal for maintenance and must be sealed prior to use. ***NOTE - Replace thrust bearing assembly when camshaft end-play exceeds .010".***

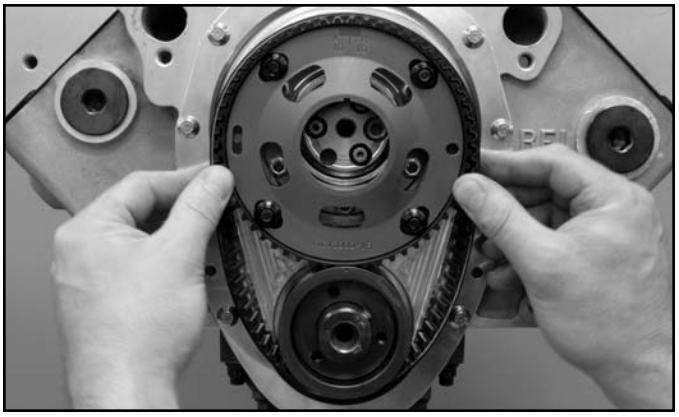


STEP 24: FOR KITS WITH PRE-INSTALLED CAM PULLEY STUDS, GO TO STEP 25 - Apply a drop of Blue Loctite to the threads of the four cam pulley studs and thread them into the back sode of the cam pulley. The back side has spotfaces around each hole. The Xceldyne logo is on the front side of the cam pulley ***(INSET)***.



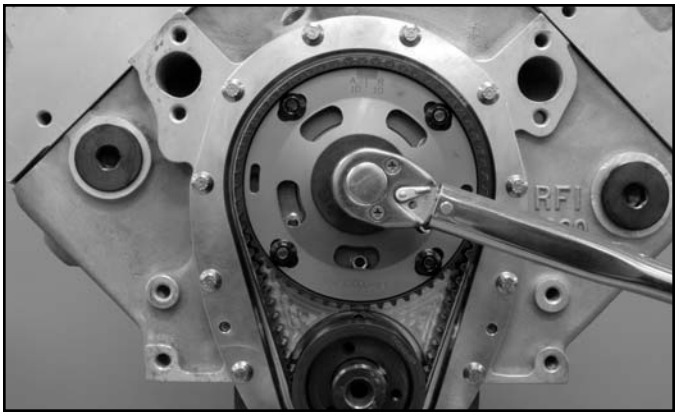
STEP 25: Place the spider over the studs in the cam pulley and thread the ARP 12-point nuts in place by hand. Make sure that the center degree line on the spider lines up with the mark on the cam pulley ***(INSET)***.

STEP 26: Using a small punch or brass drift and a small hammer, install the Woodruff key into the hub of the cam thrust bearing assembly. The key should be seated evenly against the bottom of the keyway slot.

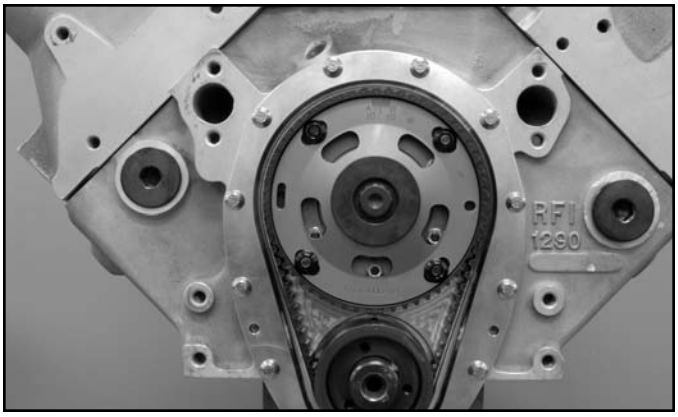


STEP 27: NOTE - *For kits with idler bearings, stack the bearing spacer, idler bearing and washer onto the idler stud. Install the supplied 12-point nut and torque to 18 lbs-ft.* - Set the cam pulley on top of the crankshaft pulley. Now slip the belt over the crankshaft pulley and over the camshaft pulley to install the belt.

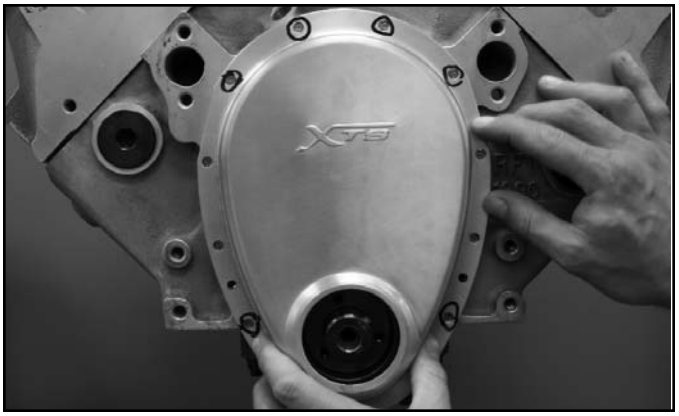
STEP 28: Align the timing marks on both pulleys so that the mark on the crank pulley is between the two marks on the cam pulley. ***NOTE -*** *Kits with idler bearings will have only one mark on the cam pulley. In this case, align the single mark on each pulley directly in line with each other.*



STEP 29: Place the camshaft pulley on to the camshaft thrust bearing assembly allowing the taper of the bearing hub to pull the camshaft pulley into position. Make certain not to dislodge the Woodruff key during this step. Install the special ARP left-hand thread retaining bolt and washer using ARP thread lube and torque to 70 lbs-ft.



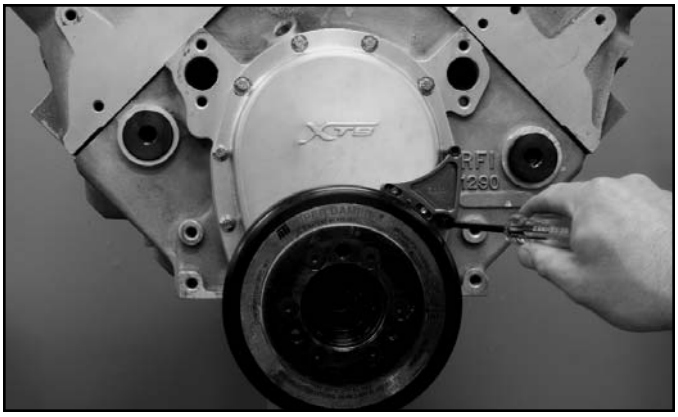
STEP 30: The timing marks on each pulley are for installation reference only. The cam must now be properly degreed. Once this is completed, apply Blue Loctite to the threads of each cam pulley stud and torque each of the four ARP 12-point nuts to 18 lbs/ft. Installation is complete.



STEP 31 (OPTIONAL): To install the optional stamped or fabricated dust cover, choose 4 of the 10 back cover mounting bolts. In this manner, only 4 bolts have to be removed to install (or later remove) the cover. Mark the 6 bolt holes on the cover that will not be used as shown.

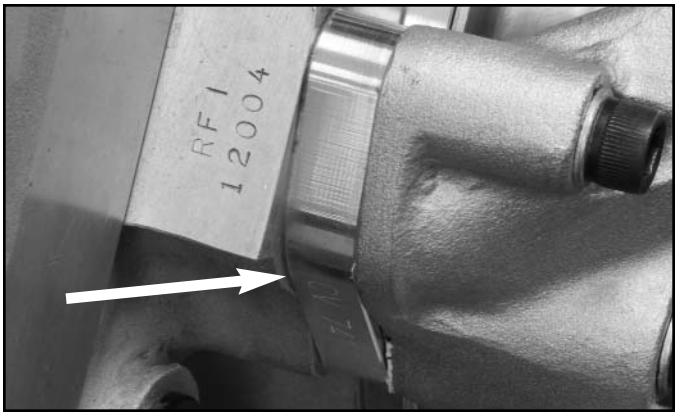
STEP 32 (OPTIONAL): The 6 marked bolt holes in the cover must be drilled out to $^{1}/_{2}$" to allow the cover to clear the heads of the back cover bolts. Clamp the cover in a drill press or mill and drill out the holes in increments of $^{3}/_{8}$", $^{7}/_{16}$" then $^{1}/_{2}$".

STEP 33 (OPTIONAL): NOTE - Deburr the 6 enlarged holes, wash the cover in solvent, dry and install. Torque the 4 mounting bolts to 96lbs/in using Loctite 242 Blue threadlocker. ***NOTE -*** A gasket may be necessary to provide proper clearance between the front cover and the cam drive.



STEP 34 (OPTIONAL): To install the optional CV timing pointer, remove two of the bolts used to attach the back cover to the engine block. The mounting screws included with the pointer may be too short to use with the Xceldyne belt drive. If this is the case, substitute them for $^{1}/_{4}$-20 x 2" socket head cap screws and install using Loctite 242 Blue threadlocker.

STEP 35 (OPTIONAL): Torque the socket head cap screws to 96 lbs/in. Set TDC as necessary. CV Products offers several pointers to cover a wide range of dampers (see the front page of these instructions).



STEP 36 (OPTIONAL): CV Products carries water pump spacers to in a variety of thicknesses to provide clearance between the back of the water pump and the belt drive's dust cover.