5.0 Coyote/BOSS Cam Phaser Adjustable Lockouts

These cam phaser adjustable lockouts are designed to allow complete camshaft degreeing while offering increased durability over the stock VCT system. These adjustable lockouts are made from billet aluminum and designed to fit the stock phaser system.

The easiest way to approach using the adjustable lockers is picture camshaft movement as the end goal, and don't get lost in the details of the actual teeth count on the unit. While it is possible to count teeth and add the numbers up, in many cases it easier to just move the camshaft to the position you want it to be in, and then adjust the plates until the teeth find the closest groove and then lock them together.

1. Remove the 6 Torx headed bolts holding the phaser together.

2. Remove the front plate slowly as there is a small spring that will force a small check valve out.

3. When you remove the plate you see the inner section of the phaser that has the three bolt holes that pass through it where it attaches to the camshaft. This inner section and small black wipers is going to be removed. Before removing note and mark the positioning of the 3 holes. They are not an exact triangle; two are closer together so that the phaser will only install one way. Note this orientation relative to the outer gear section. Take the inner section and lift it up and pull out the small black wipers, they have a little spring behind them to pay attention too and remove as well.

4. With the inner section removed you can now install the Livernois assembly into the stock outer phaser. The center hub piece replaces the hub you pulled out and slides in place. Using the mark you used before to note the orientation of the stock hub, reinsert the new hub back in the same position with the other components in the stack still aligned together.

5. Once you've installed the new Livernois components onto the stock cam phaser, you can remove the front plate, and the mid plate that have the teeth on them. Leaving only the rear plate with the screw holes sitting on top of the phaser. The small button head screws will be installed into the phaser body, put a small dab of blue threadlocker on them. Do not fully tighten the screws yet, just install them but don't fully tighten them yet.

6. After installing the bolts in hand tight position you'll want to insert the small dowel pin into the back of the phaser. There are two holes, one hole allows for the intake and one for the exhaust. Match the holes to the other complete phaser you haven't taken apart yet. The dowel pin will go into the rear of the new Livernois inner section in the same orientation as the stock one was.

7. With the pin in place take the phaser assembly and install onto a camshaft. Use the cam phaser bolts to snug the inner section to the camshaft as you align the pieces together. You want to try and closely align all the sections together so that they are concentric to each other and the other pieces.

8. Once you have these pieces aligned you can then snug down the little button head screws holding the plate to the stock phaser. Keep holding all the pieces in alignment as you snug the 6 screws. Once they are snug then check the phaser by removing and installing it. The phaser should easily slide off and on the camshaft snout with the pin. If it binds then you need to loosen the bolts and try and align it again. It should smoothly go on and off. Once it goes on and off smoothly torque the 6 bolts to 120 in lbs. Then try again sliding it off and on to check for fit

9. With the plate bolted and torqued. You can now install the outer two plates. They should slide on, with the big square lug sliding inside of the piece attached to the phaser, and the teeth lining up in position.

10. The outer ring of teeth are offset starting with the middle tooth and then going in two different directions, one clockwise and one counterclockwise. When you look down at the top of the assembly you should visibly see the center tooth being directly in line through all the plates. As you look left or right of that centered tooth you should see the offset teeth. As you go around the phaser you'll see the offset grow.

11. When adjusting cam timing it's recommended to first install the cams straight up with no offset and establish a baseline. From there you'll know which direction you have to go.

12. The easiest way to accomplish making your adjustments is a little bit of trial and error. The first cam will take the longest as you learn how much movement you need. From there it will be much quicker. If the camshaft needs to be advanced you'll want to pop the front and mid plate back just enough so that the camshaft moves independent of the phaser. Then move the camshaft itself, clockwise advancing it, or counterclockwise retarding it. Very small movements are all that is needed in most cases to get a couple of degrees.

13. Once you've moved the camshaft to the position you think it needs to be in, then take and push the outer and mid plate back. You'll see that the teeth no longer lineup anymore, you'll now want to rotate the mid and outer plate until you find the arrangement of teeth that pop back in. Again, it's easier to just move the cam and use the plate to find the teeth that correspond to that position.

14. Recheck your timing and see how much you've gained and how close you are to your intended install position. Knowing how much you moved the camshaft last time will give an idea of how much to move it forward or back to find the spot where you achieve the desired numbers you're going for.

15. Repeat this procedure until you've dialed the camshaft into your desired installation centerline. From there you repeat the same procedure on all 4 camshafts, dialing them all in one by one.

16. Once all camshafts have been timed you'll then be able to install your new camshaft phaser bolts and final torque the phasers into position.

If you have any questions at all please feel free to contact Livernois at 313-561-5500. We will be glad to assist you.