Serpentine Belt System Frequently Asked Questions (FAQs)

Kwik Performance LS AC wide mount compressor brackets with one-bolt tensioner

The following covers Kwik AC brackets which use an in-line style belt tensioner. These brackets were produced from approximately mid-2018 to date. Part numbers are:

K10470 for Corvette balancers, K10471 for LS1 Camaro, Firebird and 2004-06 GTO and K10472 for trucks and LS3 Camaro.

Question: I'm having noises coming from my serpentine system. What's the cause and how do I fix it?

Answer: If the noise could be described as a "chirp" or "squeak", it's most likely an alignment issue. If it's more of a continuous "squeal" then it's likely a tension issue.

The Gates company which makes both belts and tensioners offer this test to help determine whether you have an alignment issue or a tension issue:

Take a spray bottle of water and lightly mist the belt while running. If the noise goes away temporarily and then comes back, it's most likely an alignment issue. If the noise gets worse, it's most likely tension.

Let's take alignment first:

Make sure you followed the installation procedure found in our Kwik installation sheet which came with your kit. It's especially important to keep the compressor weight off the plates as you first tighten the large bolts which go into the cylinder head. This helps assure that the whole bracket is parallel with the cylinder head.

Then, as you start to tighten the compressor bolts, push the compressor in towards the engine, removing the small amount of play inherent in all bolt holes. Be sure to tighten the front compressor bolts first.

If possible, use a long straight edge such as a metal yard stick to check alignment with the crank pulley. Since the front lip of different pulleys have different thicknesses you want to measure from the straight edge back to say, the first groove of the crank pulley and then measure from the straight edge to the corresponding groove of the AC compressor, tensioner and idler pulleys.

Here are some of the results our customers have found when checking alignment:

1. Due to variations in tensioner from one brand to another, we supply a thin shim which may or may not be needed between the tensioner and the front plate of the bracket. Experiment with adding or subtracting the shim and observe where the belt runs on the tensioner pulley.

2. Crank pulley (harmonic balancer or damper) had been replaced and wasn't fully seated. It takes 250 ft./lbs. of torque to fully seat the pulley/damper/balancer plus there is a torque-plus-degrees-of-rotation spec not always easy to meet. Use the following dimensions as a rough guide if you suspect your pulley isn't all the way seated. These measurements are the distance from the front timing cover to the front edge of the balancer. Place a straight edge across the front of the balancer, then insert a ruler through the spokes of the balancer and measure to the straight edge.
    a. Corvette 2-1/8"
    b. Camaro (98-02) 2-15/16"
    c. Truck/SUV plus 2010+ Camaro 3-11/16"
3. Power steering pump pulley not aligned. GM power steering pump pulleys are pressed on so you need to be sure the pulley hub is flush with the end of the pump shaft. However, there is one exception to this rule: If you are re-using the pump and pulley from an LS1 Camaro (98-02), our installation instructions tell you to leave the pulley sticking out 1/8" from the end of the shaft. One of our customers came up to us at a recent Holley LS Fest and told us he had a "ticking" noise. We adjusted his Camaro pulley approximately 1/16" further out and the noise went away.
4. Squealing noise. If you describe the noise as more of a continuous squeal rather than in intermittent squeak or chirp, then the first thing to do is check the tension marks on your belt tensioner.

    Some tensioners do not have marks. In this case, use the following guidelines:

    a. Install the belt over the grooved pulleys first then slide the belt over the water pump pulley last. The belt should be moderately difficult to slide over the water pump pulley.
    b. Check the overall travel of the tensioner and see if it is approximately midway through its travel with the belt installed.
    c. Apply pressure with a ratchet or break-over to see if you can make the tensioner arm extend to its relaxed position. This should be very difficult or even impossible with the belt in place. If you CAN easily push to the end of its travel, go to the next shorter belt.
5. Replacement parts. If it turns out you do need a new pulley or a new tensioner, here are Gates part numbers:
    a. Grooved idler pulley, 70mm (2.75"), Gates 38008
    b. Smooth tensioner pulley, 70mm (2.75"), Gates 38018
    c. Belt tensioner, center bolt style, Gates 38163

Question: My belt wants to ride off the AC compressor pulley or the upper idler pulley. What's causing this and what do I do?

1. This is can certainly be an alignment issue so re-read the question above first.
2. This can also be a belt length issue. If the belt is too long, the tensioner doesn't apply enough tension and the belt can easily jump off the compressor pulley. See number 5 above.
3. Make sure your AC compressor is the correct version. We designed our AC bracket around what everybody still calls the Sanden 508 (5-cylinder) or Sanden 709 (7-cylinder in the same case as a 508) (now properly called an SD5H14 or SD7H15) with a seven (7) groove pulley. Yes, your serpentine system

uses a 6-groove belt but for some reason the AC folks chose the 7-groove compressor as their standard. There are some 6-groove compressors out there but they most likely won't align properly with our bracket.

4. Due to variations in brands of tensioners, we supply a thin shim which may or may not be needed between the tensioner and the front plate of the bracket. This variation should not be enough to cause the belt to jump but it may run closer to the front or back edge of the smooth tensioner pulley than desired so add or subtract as needed.

Question: The belt you recommended in my installation instructions doesn't seem to be quite right and my auto parts store guy doesn't know how to look for one that is slightly longer or shorter. Where can I find part numbers for other lengths?

Answer: Some LS engines have larger or smaller alternator cases and that can change the belt length needed. We've compiled a list of Gates and Dayco part numbers on either side of the belt lengths we recommend. Drop us an email at the address below and we'll be happy to forward a copy to you.

wayne@kwikperf.com or 417-955-1467

And here's one bonus tip:

1. If you've had an alignment issue and you make some adjustments, before you put your old belt back on, flip it 180 degrees so what was the front edge is now towards the engine. The belt may have taken a "set" and flipping it will let it seat back in to your new alignment.
2. Bonus tip #2. Ctrl/Click on the blue links below for installation videos on You Tube:

Corvette AC bracket K10470 - YouTube

LS1 F-body AC bracket K10471 Installation video

Truck and LS3 Camaro K10472 Installation Video

If your AC bracket was made between 2008 and mid-2018 and uses an LS style tensioner (2 mounting bolts), please call for technical assistance.

These earlier part numbers are:

K10143 for Corvette balancers, K10156 for LS1 Camaro, Firebird and LS1/2 GTO and K10163 for trucks and LS3 Camaro.