

The serpentine belt on your R53 MCS is a critical component in the engine. It passes power from the motor to the air conditioning compressor to keep you comfortable, the alternator to keep your electrics running and to the supercharger, to give you a boost of power. A broken belt can leave you stranded on the side of the road, so it's a good idea not to neglect this tiny strap of rubber!

I happen to run a smaller diameter supercharger pulley and I occasionally drive my car in a very spirited manner, so I replace my serpentine belt as preventative maintenance every 2 years or 20,000 miles, whichever comes first. I also keep an ear open for the trademark signs of a failing or slipping belt; squealing from the engine bay for the first few seconds after start-up (when the rubber of the belt is cold) or after driving through a puddle (when the belt is wet). In more extreme instances, the squeal will be accompanied by a brief loss of power as the belt slips and the supercharger doesn't get the power it needs to feed air to the engine.

The belt feeds around several pulleys on the passenger-side of the engine. It is held taught by a tensioner assembly which uses a very strong spring. The most difficult part of performing the belt replacement deals with relieving the pressure and locking the tensioner out of the way. MINI makes a special tool that is available for \$90 to pry the tensioner away from the belt and I strongly recommend that you find one of these. There are a few enterprising souls on NAM who have found alternative methods of doing this, but I'm a big fan of using the right tool for the job. There are also other, possibly faster, ways of doing this task, but this is the one that lends itself well to novice mechanics and a photo-tutorial.

I carry the items necessary to swap the belt in the boot of my MINI at all times, but I was a Boy Scout and some might call me a tad bit over-prepared. I've never had to do this swap on the side of the road, but I have loaned the tool and spare belt to a fellow motorist who was stranded at a track event one time.

What you will need to complete the belt replacement:

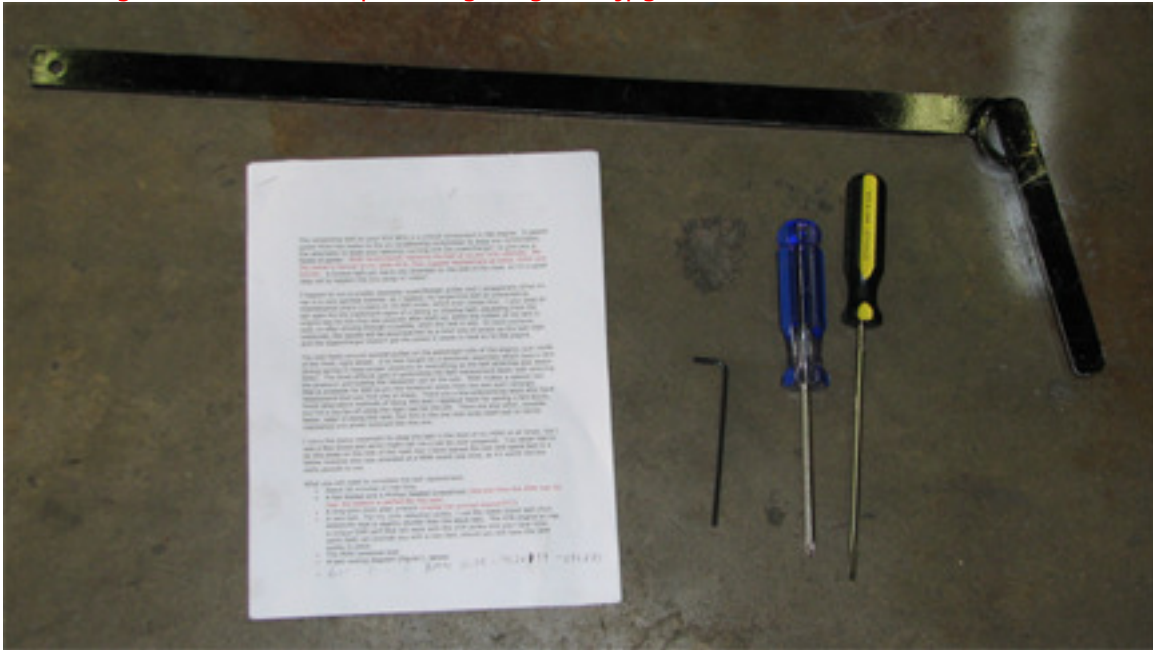
- About 30 minutes of free time
- A flat-bladed and a Phillips headed screwdriver
- A long-arm 2mm allen wrench
- A new belt. For my 16% reduction pulley, I use the Gates brand belt (Part *K060539*) that is slightly shorter than the stock belt. The JCW engine kit has a unique OEM part that will work with the JCW pulley or your local MINI parts desk can provide you with a new belt, should you still have the OEM pulley in place.
- The MINI tensioner tool
- A belt routing diagram (see Figure 3, below)

Step 1: Start by parking the car with the steering wheel turned all the way to the right. Leave the car in first gear (or in park for you MCSa drivers) and apply the parking brake. Loosen the lug bolts on the front, right wheel by ¼ turn each and lift the car using the factory jack in the boot of your car or a floor jack. Secure the car on a jack stand or use some other means to ensure that the car won't drop all the way down to the ground should the jack fail. Remove the front, right wheel and

gather your tools. If you are doing the work on the side of the road because your belt broke while driving, slide the wheel and tire you just removed under the car to catch it should the jack slip. It's better to dent a wheel than to get trapped under the car. Safety first!

Figure 1: You will need a Phillips screwdriver, a flat-bladed screwdriver, a long-arm allen wrench (a 2mm worked well for me), the tensioner tool (across the top) and these instructions

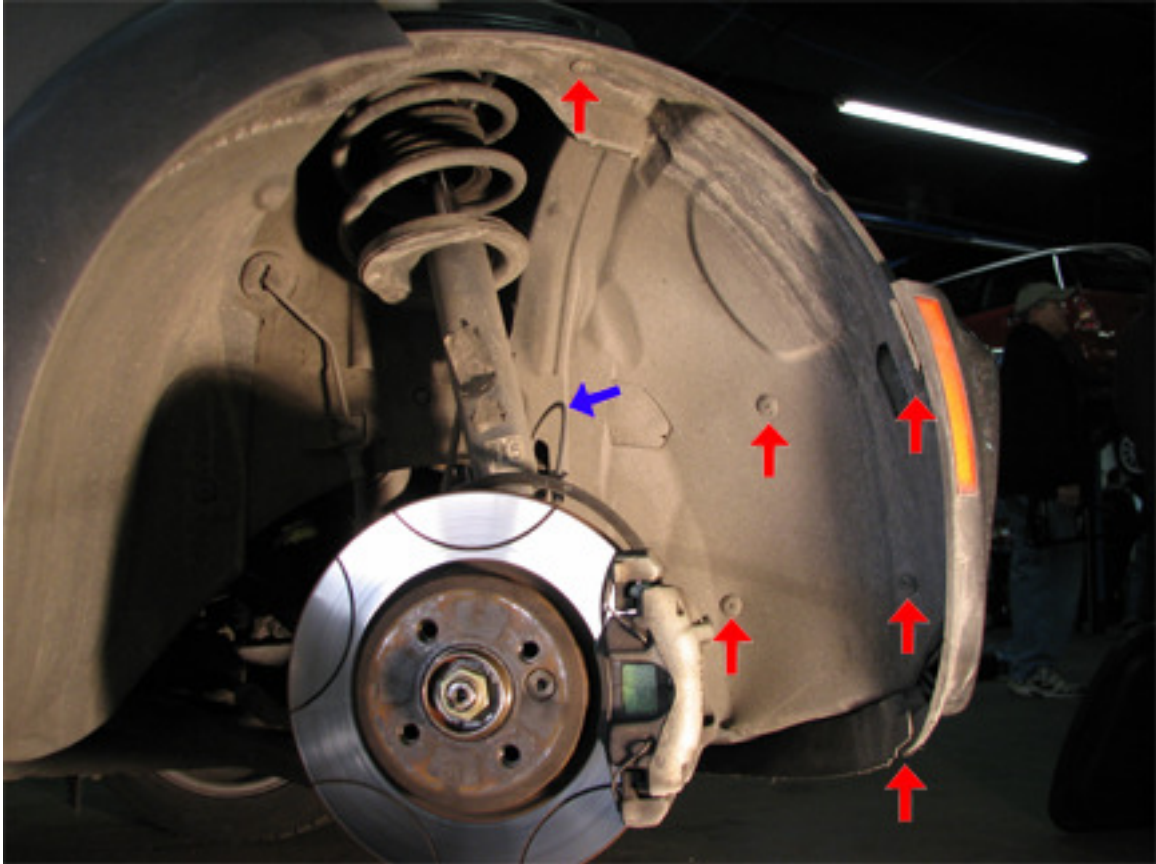
Insert Figure #1 here: [SuperchargerFigure1.jpg](#)



Step 2: Use the flat-bladed screwdriver to remove the four plastic 'rivets' that hold the front of the plastic wheel well liner in place. Remove the one Phillips head screw that holds the wheel well liner in place, directly over the axel. You also have to remove a Phillips head screw that is just under the front bumper, near the fog light area that holds the front of the liner in place.

Figure 2: Remove the fastners marked by the red arrows. When you peel the large plastic wheel well liner back, be sure not to get tangled up in the brake sensor wire, marked with a blue arrow.

Insert Figure #2 here: [SuperchargerFigure2.jpg](#)



Step 3: Gently pull the front of the wheel well liner away from the body of the car. There is a sensor wire that tends to get in the way, so carefully move it aside (see the blue arrow in Figure #2). The liner has lots of give, so just flex it up so you can see the side of the motor, the belt and the pulleys. You can't see the entire side of the engine because the frame of the car is in the way, but you have an inch or so of space to work in there. It's tight, but there is just enough room to do the job.

Figure 3: The wheel well liner flexes up and out of the way, giving you access to the supercharger belt and the crank pulley (the black circle hiding just above and to the right of the brake disc)

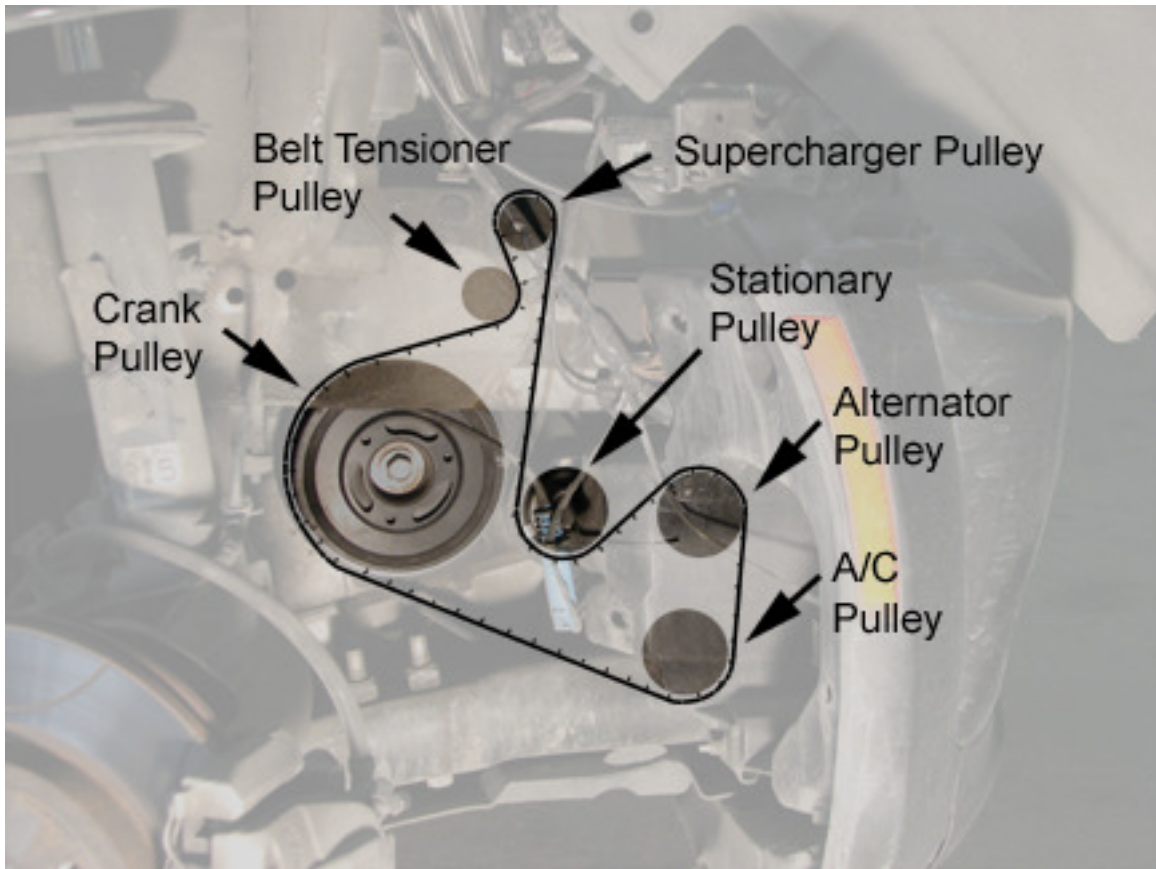
Insert Figure #3 here: [SuperchargerFigure3.jpg](#)



Note that the belt has grooves on one side of it. These grooves help provide traction to the belt and it is important that your new belt be installed with the grooves facing the same direction. In the diagram, below, the tick marks on the belt show the side with the grooves.

Figure 4: Here's a close-up of the wheel well area so you can get oriented (see the brake disc in the lower left corner). It's easy to get lost when installing the new belt, so this diagram will be useful. The tick marks on the belt show the side with the grooves. You can't see all of the pulleys from this angle, but I've marked their approximate positions for you.

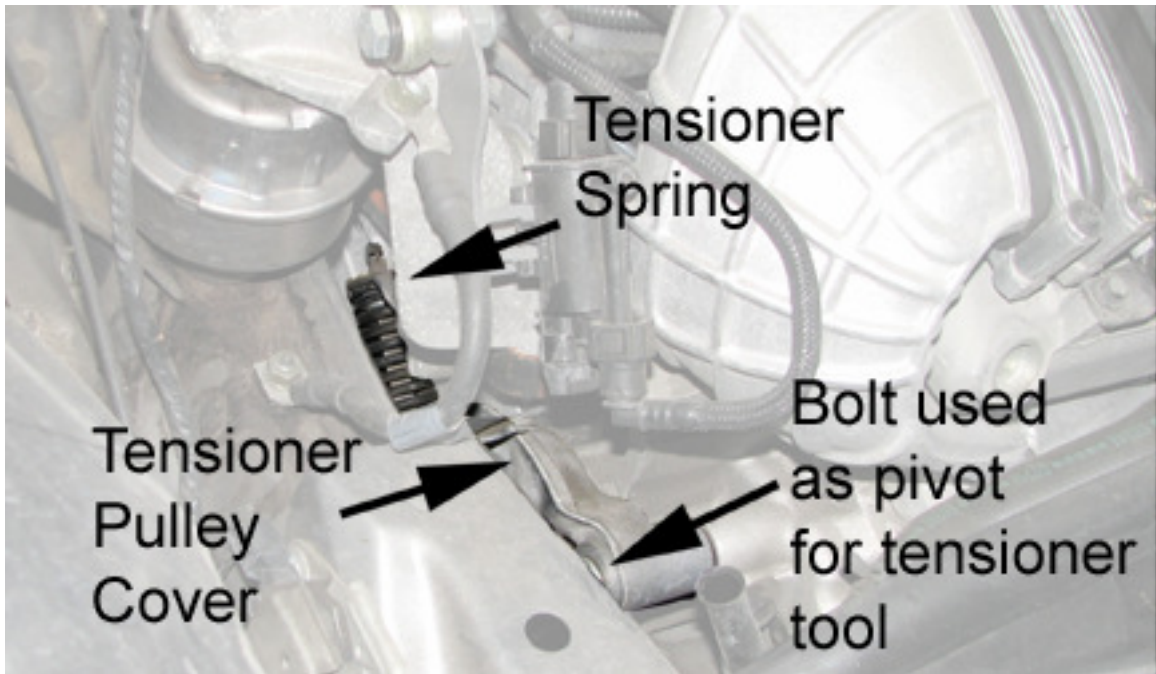
Insert Figure #4 here: [SuperchargerFigure4.jpg](#)



Step 4: Look down at the belt from the top of the engine bay (Figure 5). You can see that the upper-most pulley is covered by a metal cover. This is part of the tensioner assembly. There are 2 pins on the tensioner tool that slide into the side of this cover. The cup at the bend of the tensioner tool sits on a large bolt and uses it as a pivot point. Fit the tool onto these points and pull down on the handle of the tool slowly to get an idea of how it works. It slips off very easily, so be careful and take your time. The tensioner spring is very strong and you don't want to get your fingers caught in there!

Figure 5: Looking down at the passenger side of the motor from the engine bay, you can see the tensioner pulley cover (and the pulley underneath it). You can see the strong spring that keeps the belt tight and the metal strap that runs out the top of it. Locate the large bolt on the front side of the tensioner cover so you know where the cup of the tool will be placed.

Insert Figure #5 here: [SuperchargerFigure5.jpg](#)



Step 5: When you push down on the tool, you will notice a small metal strap at the top of the tensioner assembly. There are 2 holes in the strap that are visible once you pull the tool all the way down. Take the 2mm long-arm Allen wrench and slide it into the second hole. You can now release the pressure on the tensioner tool slowly and the Allen wrench will lock the tensioner safely out of the way. Don't try to cheat some time by skipping the locking step... one slip and your fingers are crushed!

The first hole is a handy thing to know about. On cars with a healthy supercharger belt, you will see at least $\frac{1}{2}$ of the first hole when the engine is off. On cars with worn or stretched belts, you won't be able to see this hole at all and you know that it's about time to do the replacement.

Figure 6: Here is a picture of the Allen wrench inserted into the second hole of the tensioner spring strap, removing the tension from the belt and making it ready for replacement. You can see the first hole above it. That hole should be at least $\frac{1}{2}$ visible when your belt is in good shape and under tension. If the spring covers more than $\frac{1}{2}$ of that hole, it's time to replace your belt.

Insert Figure #6 here: [SuperchargerFigure6.jpg](#)



Step 6: Once you are sure that the tensioner is locked, take one more look at the path and orientation of the old belt and then remove it from down in the wheel well. Replace the old belt with the new one by feeding it up from the wheel well and hanging it over the pulleys. I find it easier to start by hooking the belt over top supercharger pulley and working my way down, ending with the large crank pulley on the lower left. It should be a fairly snug fit. If you have a bunch of slack, go back to Figure 4 and check your belt path... I'd bet that you have missed one of the pulleys. My first time doing this, I missed that little one between the AC pulley and the crank pulley. Just go back and try it again.

Step 7: Use the tensioner tool to remove the pressure on the Allen wrench and remove it. Gently lower the tensioner back down onto the belt. You should feel the belt take the pressure and the belt should become taut.

Step 8: Replace the wheel well liner, being careful to return the sensor wire to it's normal position. Replace the 2 Phillips head screws and the 4 plastic rivets. Remount the wheel and carefully lower the car back down to the ground. Once it is back on all four wheels, be sure to torque the wheel bolts to the correct values for your car.