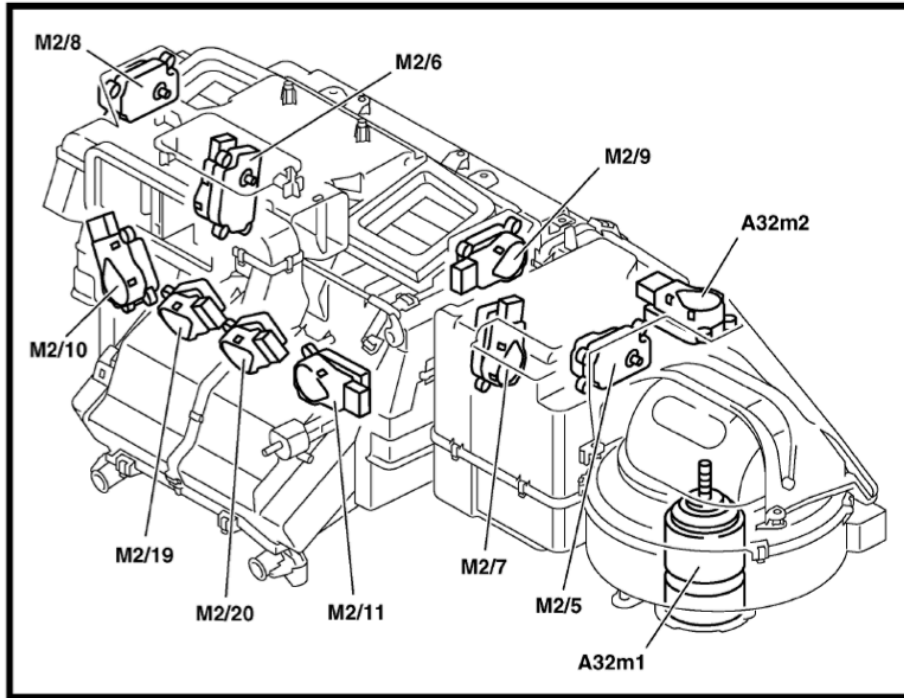


W203 HVAC Stepper Motor Linkage Repair

As a lot of you have discovered, retail on the stepper linkage arms for the footwell damper steppers (M2/10 and M2/11) is relatively reasonable. I paid \$32 at my local MB dealer for the pack of two.



Unfortunately, replacing those linkage arms is quite a big job. Luckily there has already been a fantastic write up by Racin_fool liveniceguy and Wilsophia on that process as well as a great set of .pdfs compiled by krassdav. See below for the link:

<http://mbworld.org/forums/c-class-w203/177068-noisy-air-conditioner-stepper-motor-replacement-clicking-hissing.html>

When these stepper arms break it seems pretty common for the two fresh air linkages (M2/19 and M2/20) to break as well. Unfortunately, these linkages aren't so cheap. You must buy a bag of HVAC parts that retails for around \$80 to acquire them.

The kit number is A203-830-00-32 and is represented by the image below.



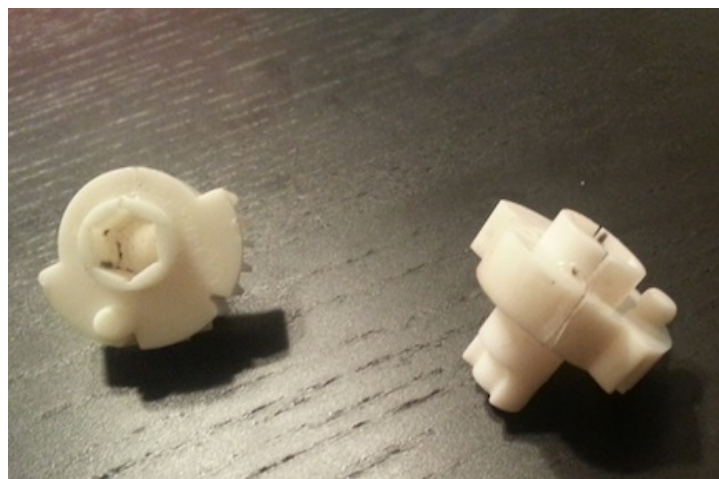
Note: If you need other parts in this kit, you can buy them at Amazon by searching the part number. Or, of course you can go to your local MB dealer.

My first reaction to going through the tremendous trouble of replacing the two linkage arms just to find out that these two gears controlled my center air vents, had to be replaced as well, and were part of an \$80 package went a little like this: **F\$%&#*@!!!**

After settling down a bit, I was determined to find a cheaper way. And, after a little ingenuity I finally found a solution that cost me \$2.18. I had already read a lot of comments here where people were discussing paying \$80 just to get one linkage gear, so once I discovered my method worked, I decided to make a set of instructions and post them up.

This process isn't quite as simple as gluing them with epoxy or superglue as a lot of you already know (I tried that too). But, it's pretty simple and very cheap.

The M2/19 and M2/20 linkage gears are shown in the image above on each end of the line of white gears on the top. Here is a close-up of my gears once I had them removed:



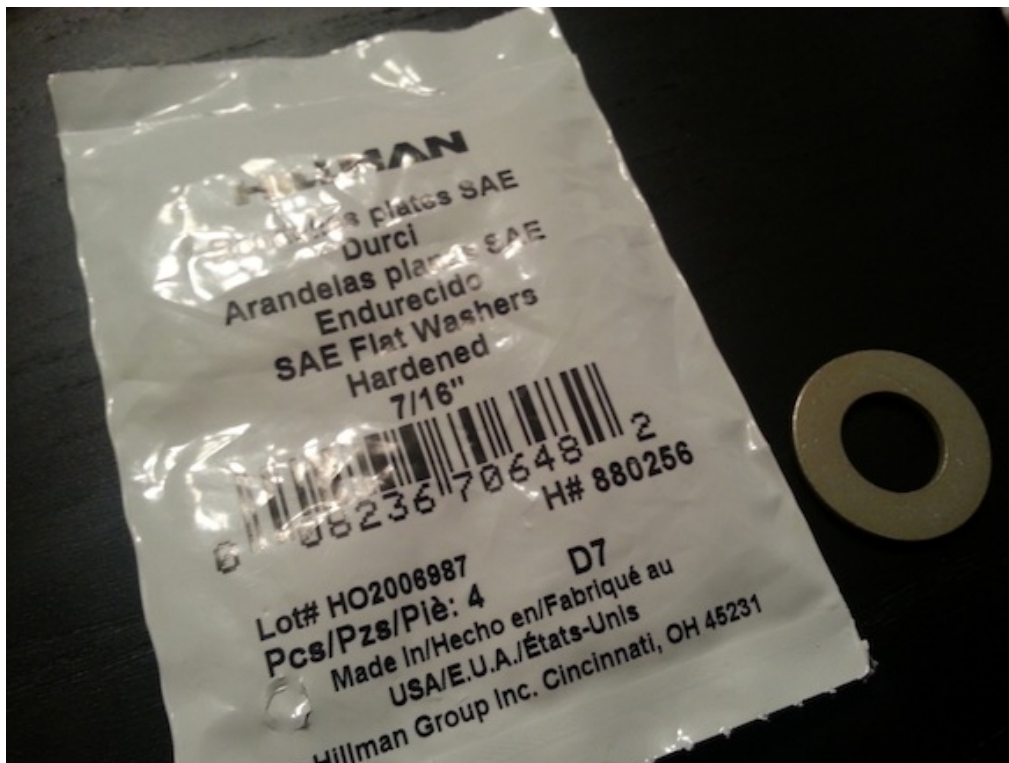
The Process

Like I said, this process is pretty easy. But you will need a few things:

- 1.) A set of vicegrips
- 2.) A set of wirepliers
- 3.) A drill
- 4.) A rotary grinding bit
- 5.) 2 or 4 7/16" washers

The most important part of this list is, by far, the washers. They may be a little difficult to find, but if you take your linkage gears to the hardware store you can try numerous washers until you find the correct ones. You want washers that are small enough that they are not bigger than the outer ridge of the linkage, but big enough that they will fit around the inner part of the linkage gear.

I found these at Lowes. They fit perfectly, so if there is a Lowes nearby head that way. And, don't forget to take your linkage just in case you don't see this one in stock.



If you can't find these, try as many 7/16" washers as you can find until you locate one that

provides a snug fit. Here's how these fit on the gear linkages before modification:



After you find the right washer (one that will slide snugly onto the small part of the linkage) make sure you have the other items on the list and head home.

If you don't have a rotary grinding bit, pick one up while you're at the hardware store. They're pretty cheap and will fit in your drill just like a normal drill bit. Here is a picture of one (ignore the regular drill bit it was just laying there):



Once you get back home and are ready to start, take the washer and place it on top of the gear linkage as pictured below. Take a sharpie and mark around the little plastic ball that sticks out on top of the gear like so:



Now, remove the washer from the linkage and place it in the vicegrips with the mark facing outward so you can grind it with the rotary bit:



Place the rotary grinder bit in your drill and use it to create a notch the size of your mark. Note that this is much, much easier if you place the vice grips on the ground with the washer facing outwards and use your foot to secure it in place. If you try to hold the vicegrips in your hand, the grinder bit will probably slip and roll around the edge of the washer.

Be careful to secure the vicegrips well. You don't want that rotary grinder slipping and grinding your shoe or hand.

After you finish notching the washer, it should look like this:

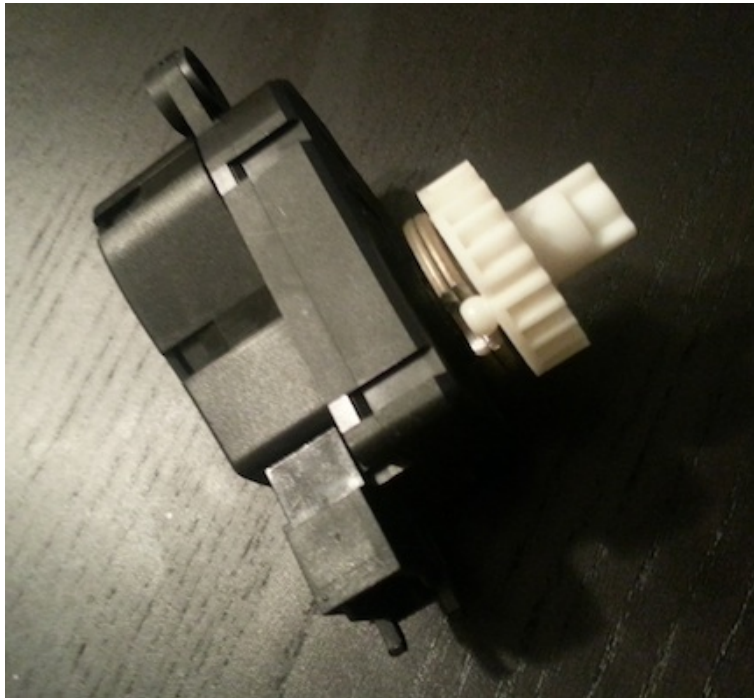


Now, take the washer and place it back on the gear linkage. Use the vicegrips and wire pliers to push it gently onto the center of the linkage. Work the washer onto the linkage carefully using the two sets of pliers. Go around it and push it down gently. You don't want to break the linkage any worse.

Once you have the washer in place it will look like this:



The washers I used were thin enough that I was able to use two of them for extra durability. Once I placed them on the linkage they looked like this:



You'll want to make sure the washers you choose (assuming they're different than the one's from Lowe's) are thin enough that the gear still fits all the way down onto the stepper motor. If not, you may want to back off of two and just use the one.

You're now ready to head to your car and install the stepper motors.

Installation:

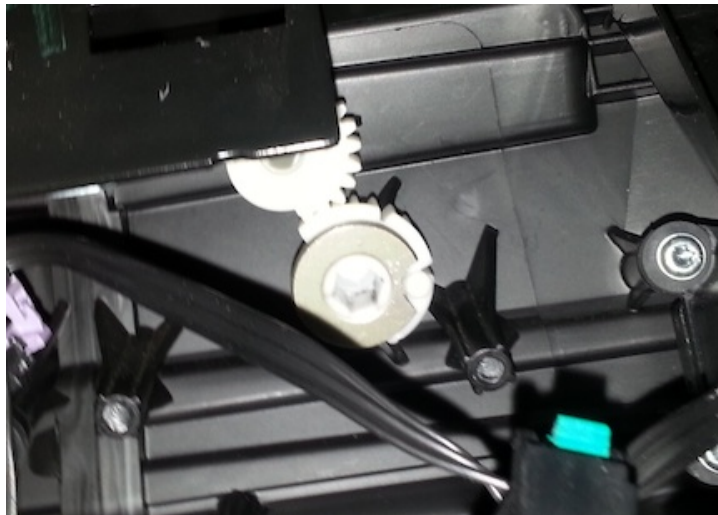
I've notice a lot of people have questions about how to put these things back on properly, so I'm posting pictures of both of the linkage gears as I placed them on my car. I noticed that the left stepper motor immediately turns clockwise when it begins to spin. And the right one turns counter-clockwise.

So, I adjusted the left side gear to where it was all the way counter-clockwise and the right all the way clockwise. See the pictures below for a clearer understanding of what I mean:

Left side (drivers side in U.S):



Right side (passenger side in U.S):



With the gear linkages adjusted this way, they will turn a full half turn before reaching a stop. This will give you plenty of time to hold down the front defrost and recirculation buttons.

Here is a picture with both linkages and stepper motors in place:



After you have everything back into place hook up you're a/c control unit.

Turn the car to the on position and immediately hold down the front defrost and recirculation buttons to re-sync your steppers.

If you have replaced all of the broken linkages, the lights will blink for about 30 seconds and will turn themselves off. If they do not, let them circulate for a minute or so. Then turn the car off and let it sit for a few minutes.

If the process didn't stop on it's own, you likely have other linkages broken. Probably, these are the stepper arms if you haven't already replaced them. If not, you'll have to dig deeper (likely removing the dashboard completely) to get to the other linkages.

I actually have one broken further in the dashboard (A32/m2 I believe), so when I re-sync I have to stop it manually. But, it's definitely not worth replacing to me. With these two gear linkages and the two stepper linkage arms replaced, my vents, floor, and defrost work great.

Thanks for tuning in!

TeeDeezy (aka tdaily)