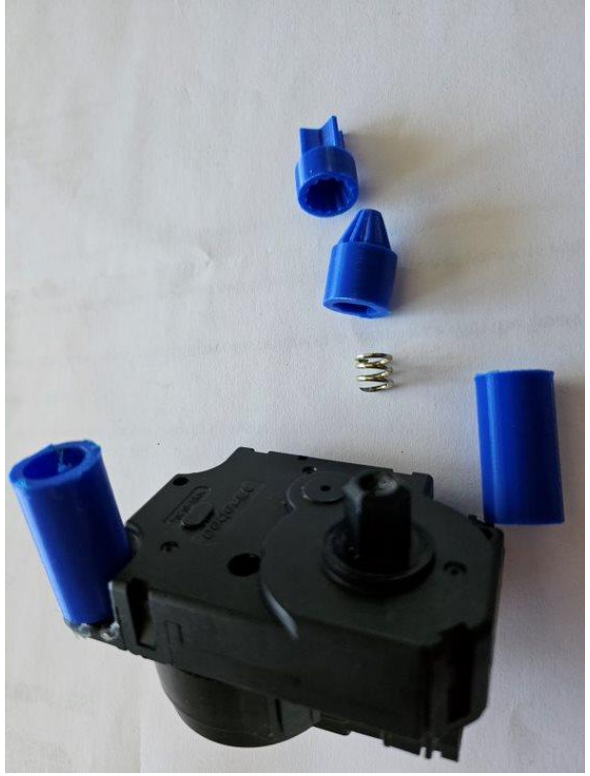
Nissan Rogue 2015 to 2020 Blend Door Modification Fix



READ NOTES FIRST!

1/20/24 See **New Notes** on last 5 pages, We have **New lessons learned** from people that had issues installing 3D kit. This includes a 1 year wear report and a new insert created from lessons learned.

2/13/24 Added clip improvement.

12/5/2024 Added New Insert, and Description of Little wear on 1 year installed part.

Disclaimer and Warranty

No Warranty is offered, this is a modification that worked for our 2018 Rogue. Use this kit at your own risk. I spent 3 weeks in the evening drawing in CAD and 3D printing, working on a design that worked. Replacing the HVAC box is the proper way to return the car to Nissan's repaired state. This repair is not authorized by Nissan. This is my work-around instead of replacing the HVAC box for the Blend door stripped spline issue. It will require you leave off the directional foot vent. So, when lower vent air is selected it will blow on your knees and not your feet when installed.

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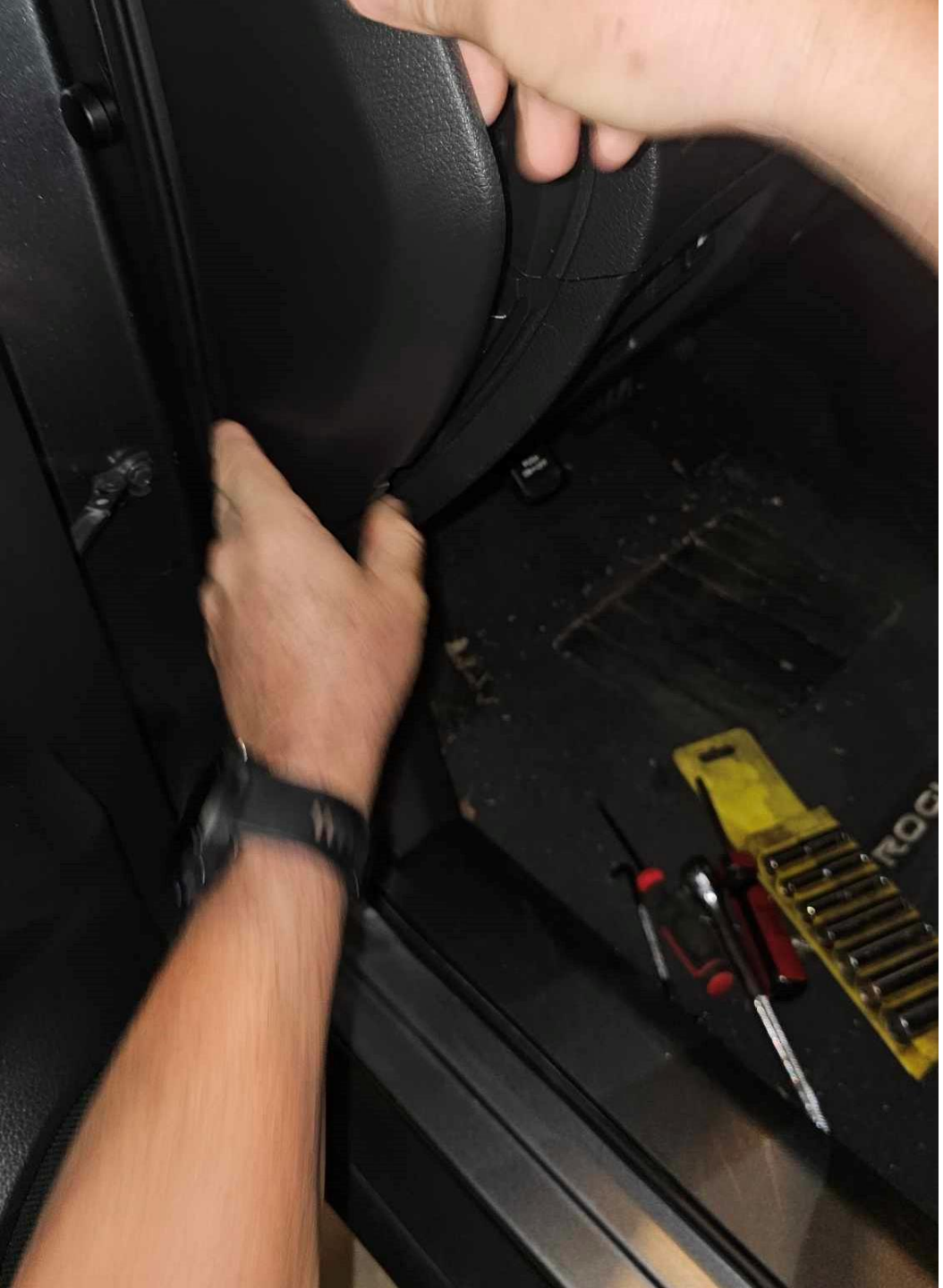
The instruction pictures will show a mix of blue parts and black parts.

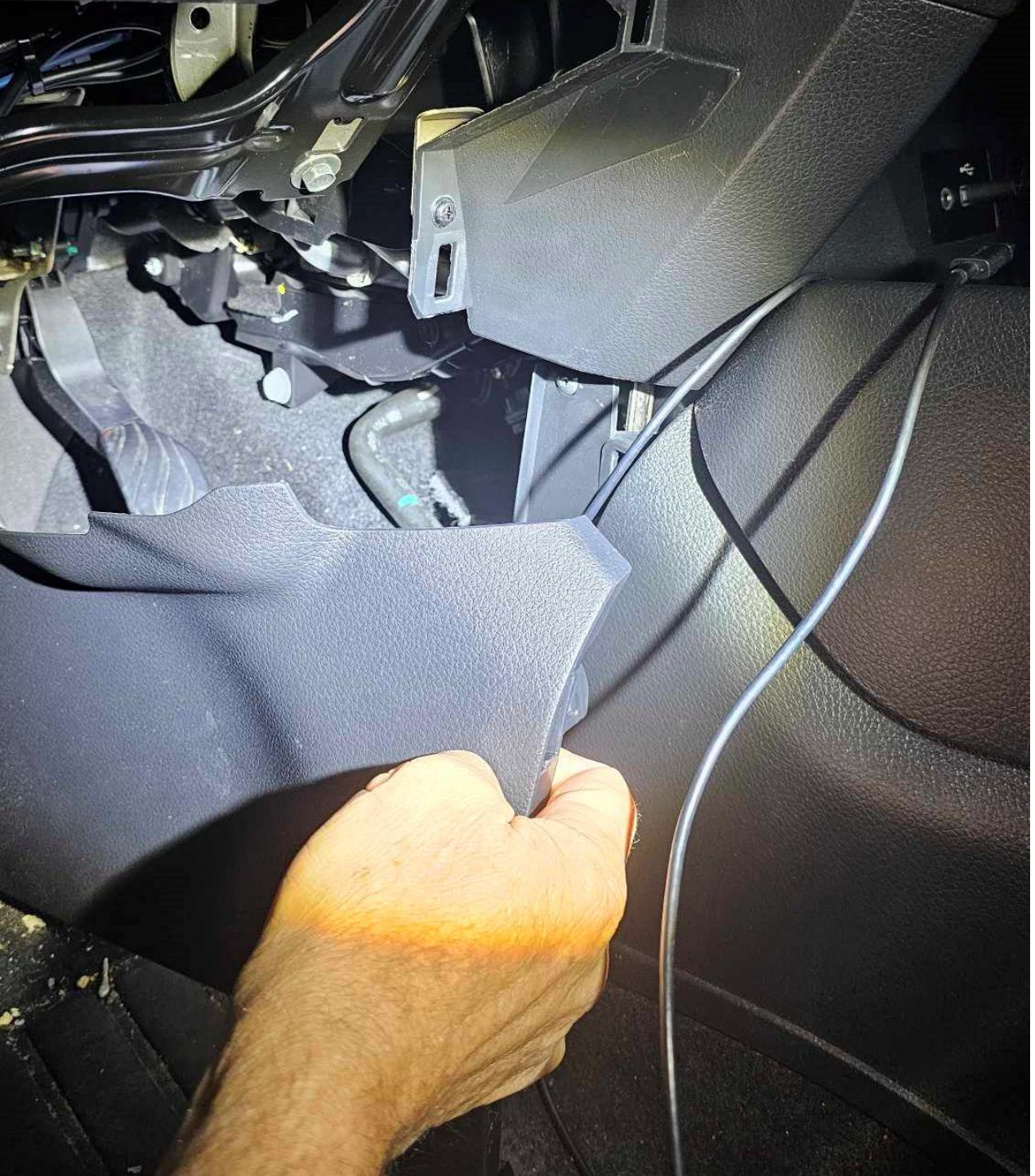


Step1- Remove Fuse Cover

Step2- Remove two 10mm bolts for release lever and let it drop down:

Step3- Remove lower cover, this piece has no bolts and just snaps out. Work its way loose all the way to the center console:

Step4- Remove the connectors on lower console so you can put it aside. Note: there is a connector latch you push down that allows the connector to easily come out. Might need to use small screwdriver to push, my fat fingers had a hard time.



Step5-Remove lower center console cover.

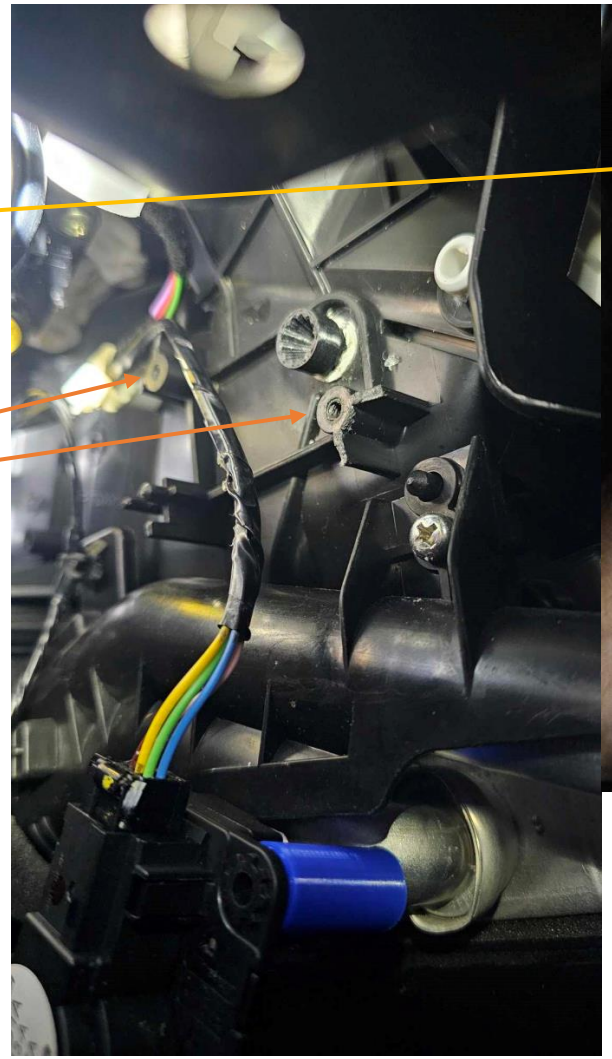
Step6-Remove foot vent.

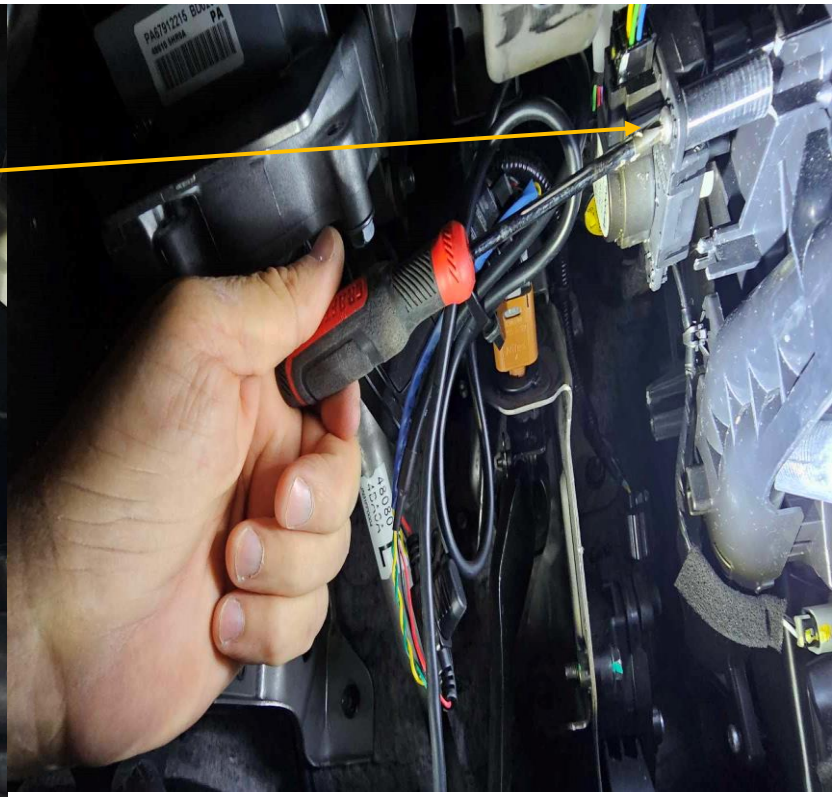
This Step was the most difficult step for me. I think the best way to remove this is to:

- Remove the phillips screw closest to you.
- Use something to pry off the top part of the vent latch.
- Pull the vent out, while the second screw is still attached.
- Now you can manipulate the vent in a position that makes it a little easier to get the second screw.
- Remove second screw, I had to use a phillips head on a 90 deg bent driver. You could probably get it with a small ratchet with a phillips end.
- Put the vent aside, ***you will not reinstall this piece.*** The air will just blow from the location you removed it.

Step7-Remove the blend door actuator motor held on by two phillips screws.

Location of two screws with motor removed.

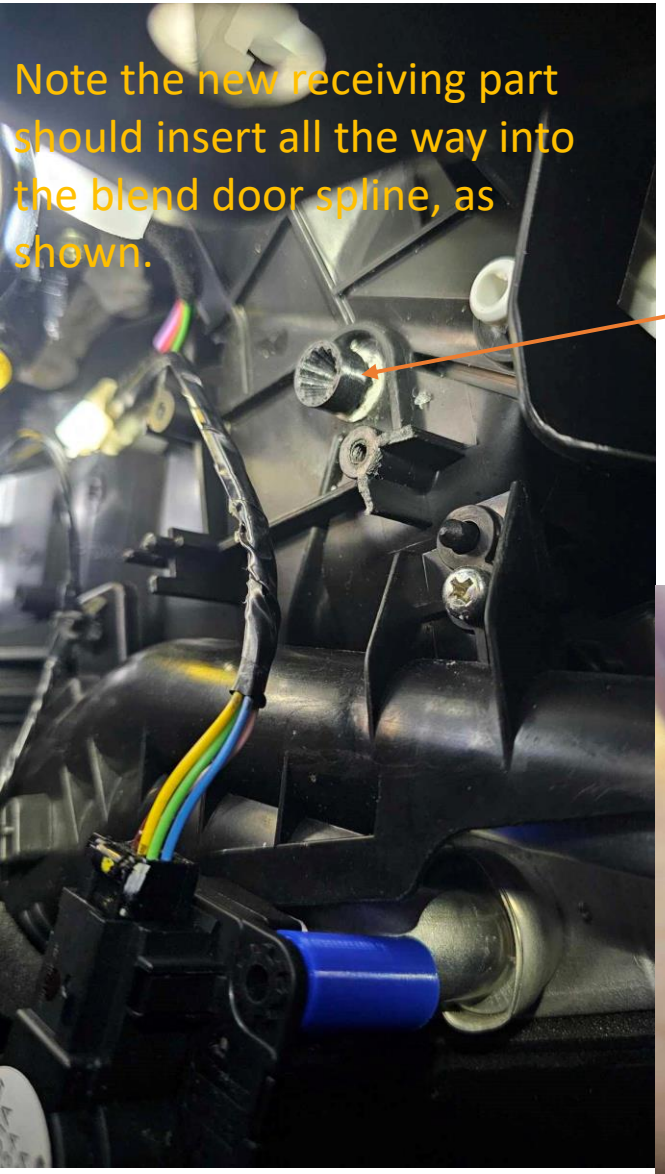


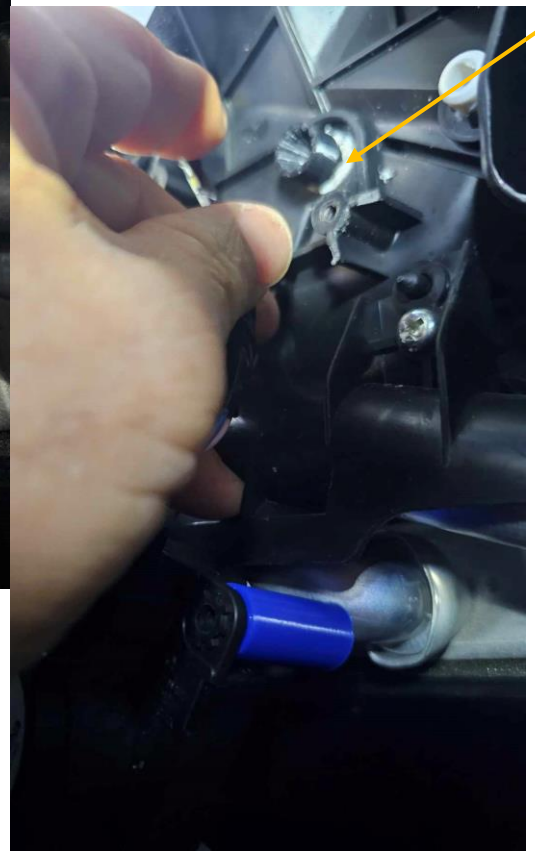


Note: pictures show spacers that will not be there, when first taking actuator off.

Step8-Install new slip gear on actuator shaft.

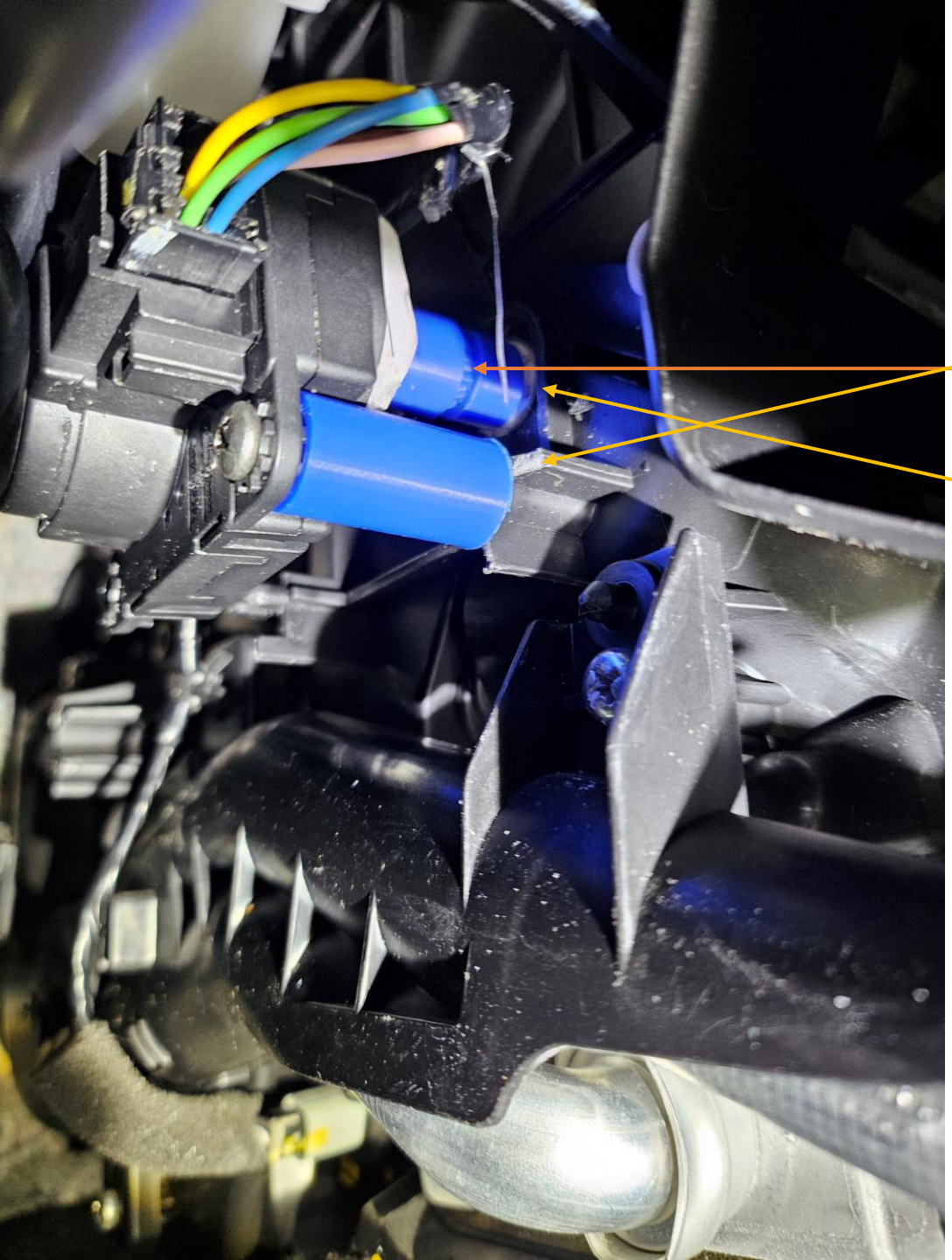
- Verify spring is in part that goes on actuator shaft.
- Slip part on shaft and insure it will spring back and forth with spring. (When you push on part, it should spring back when on shaft.)
- Install 2 new spacers on actuator. (Color of spacer may vary , this one is blue)





Step 9-Install new receiving spline into stripped spline, on blend door.

- You should be able to turn the blend door at about ¼ turn clockwise or counterclockwise by hand. The receiving piece should go all the way in, it may take some force by hand. It must line up with groove in the back of the damaged spline.
- The blend door spline is usually damaged and split at the ½ to ¾ depth. This part will slide into the undamaged part. This new design will not allow for the force that would normally strip out the remaining undamaged spline. One of my first design's did not allow for slipping and it sheared off my new part. I assume either HVAC box under the blend door has warped some, because of the heat under it, and caused the door to move less, or the actuator torque and spline design just wears a lot over time.
- If there isn't any undamaged portion in the spline then you may need to glue the part into the spline. See version 2 insert note on the last page. Use and epoxy or JD Weld.



Step10-Screw actuator back into place

- If alignment tabs are in the way clip them so the spacer can mount flat.
- Secure the actuator, you should see the new slip gear is compressed by spring but has some movement of the spring left.
- Now start the car, turn the air temp to 60 deg. Once the actuator stops moving(it may slip), move the temperature control to 90 deg. You should see the blend door move and hot air will be blowing through vent. (once the car is warm enough).
- Put the temp to the desired temperature, and the actuator should move somewhere in the middle of its ¼ rotation.
- Now just put all the panels back together, reverse order of how you removed them.

1 Year Wear Report 12/5/2024

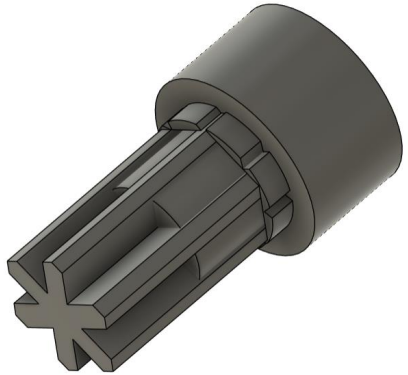
We recently removed the kit we installed a year ago and noted wear. Below is a picture of these parts. The wear was minimal, even under a microscope. It was less than .001 inches. At this rate I would estimate a life of over 5 years with -20 to 80 deg C temp changes.

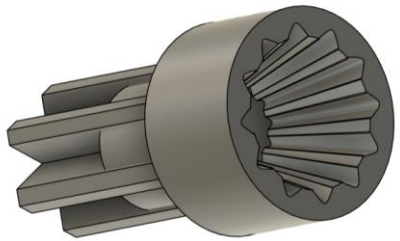
Not even enough wear to smooth print lines

Minor wear

New insert longer shaft no glue, no sanding needed
12/5/2024

After about 1 year worth of feedback we have a new insert. A few of the installations had a split spline that would open when inserting our version 1 insert (which required sanding). The version 2 insert with the retainer clip provided with the kit should resolve these issues as well. The longer shaft is installed just like the instructions show for version1. A picture of the version 2 insert is below.





CAD drawing

Actual Picture of print

New Notes:

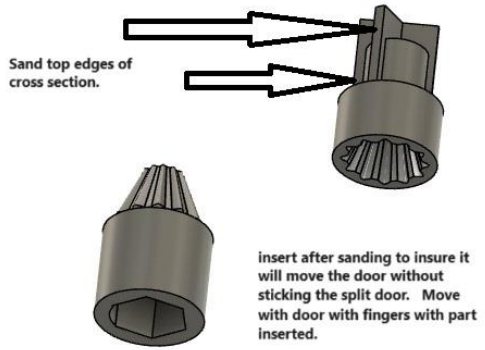
The description below if for the version 1 designed spline , the version 2 design spline will fit without sanding or glue. 12/05/2024

The key to insuring this will work is:

To insert the female piece into the stripped spline make sure you can move it back and forth ¼ turn with fingers. In other-words insure the door moves with it inserted

- If it doesn't move take it out and insure the door moves without it in, (use needle nose pliers). If it doesn't move without it in, you will need to free it up whatever is sticking it.
- If it moves with it out (which is what a few people have experienced), and not when its in, you will need to sand it like described below. Re-insert it and insure it moves the door. If it slips in the spline you may need to use some industrial hot glue to fill the voids.

Once you insure the door moves with the insert in (by turning by fingers) then the mating piece and motor installed should then work.

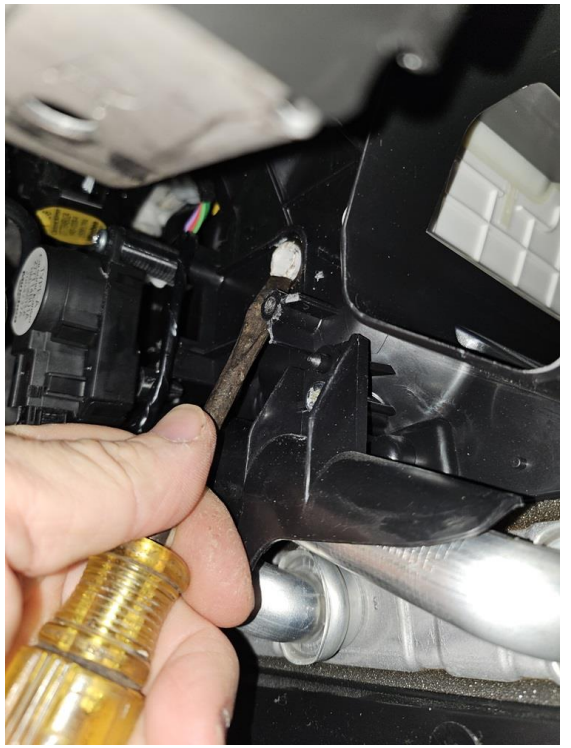


1/13/24 Notes:

After getting feedback from the hard installations I came up with an improvement: (I installed it on my Rogue and it actually gave me a few degrees more movement in the hot direction).

Some damaged blend door splines are split more than others. The ones that have a greater split will cause the door to drag more, and in some cases restrict movement when the part is inserted. So I took a 5/8” retaining ring and installed it around the outside of the blend door spline. Even further improved the fix.

Note: the new version2 insert should eliminate this, however still use the retainer ring to reduce the potential of additional splitting. 12/5/2024

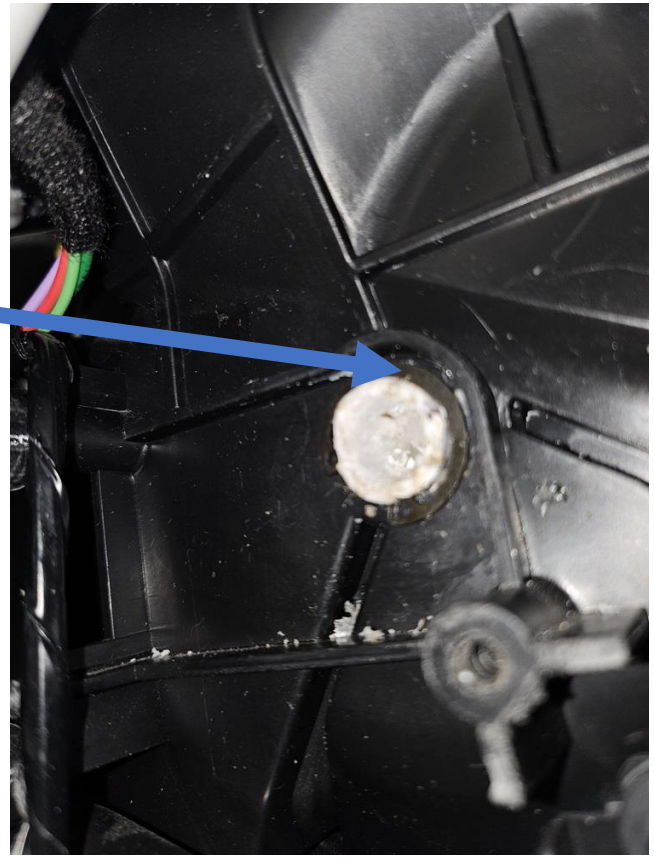


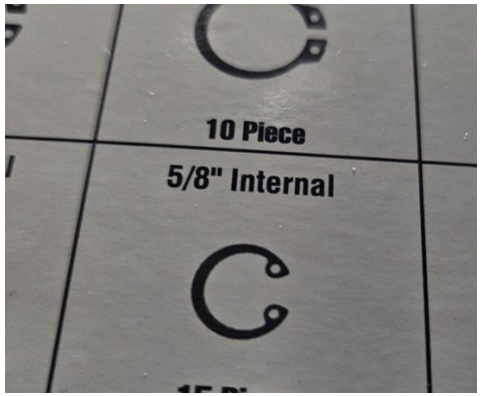
- Pull the end of the blend door out. I used a flat head screw driver.

1/13/24 Notes:

- Install retainer clip onto outside of blend door spline.

Retainer ring installed



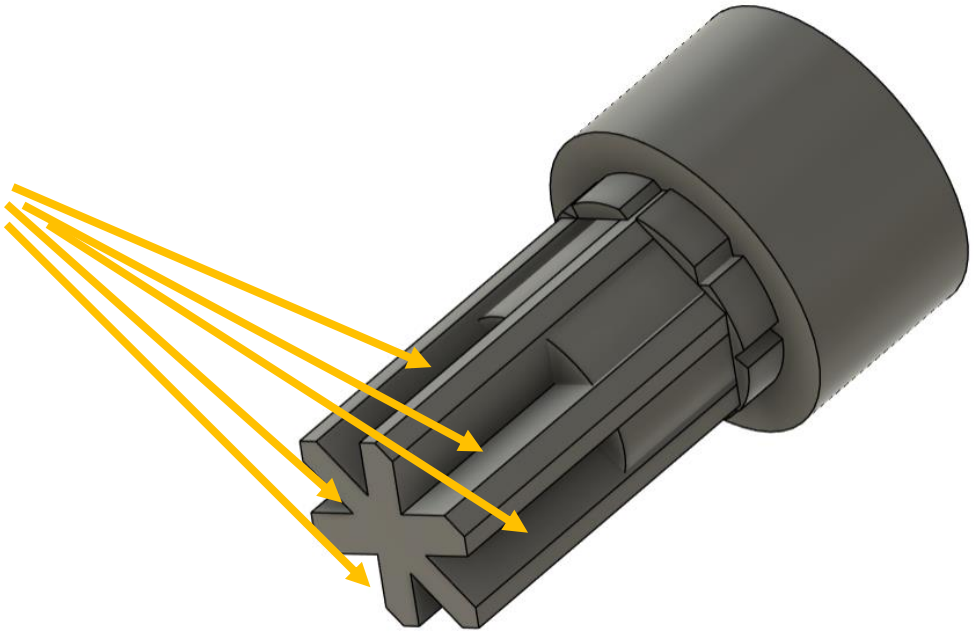


Then install kit as shown above

Note for the rare occasion of extensive spline damage.

We had a few customers that had been using a screwdriver to manually turn the blend door as their temporary fix. In this instance or any other repair method used, that has damaged the spline deep into the blend door we have included these cavities so a glue would adhere to the damaged part of the spline.

Apply a glue in these cavities and insert. Do not use too much glue as to have it come out the front. We don't want it to glue the blend door from moving.



12/5/2024