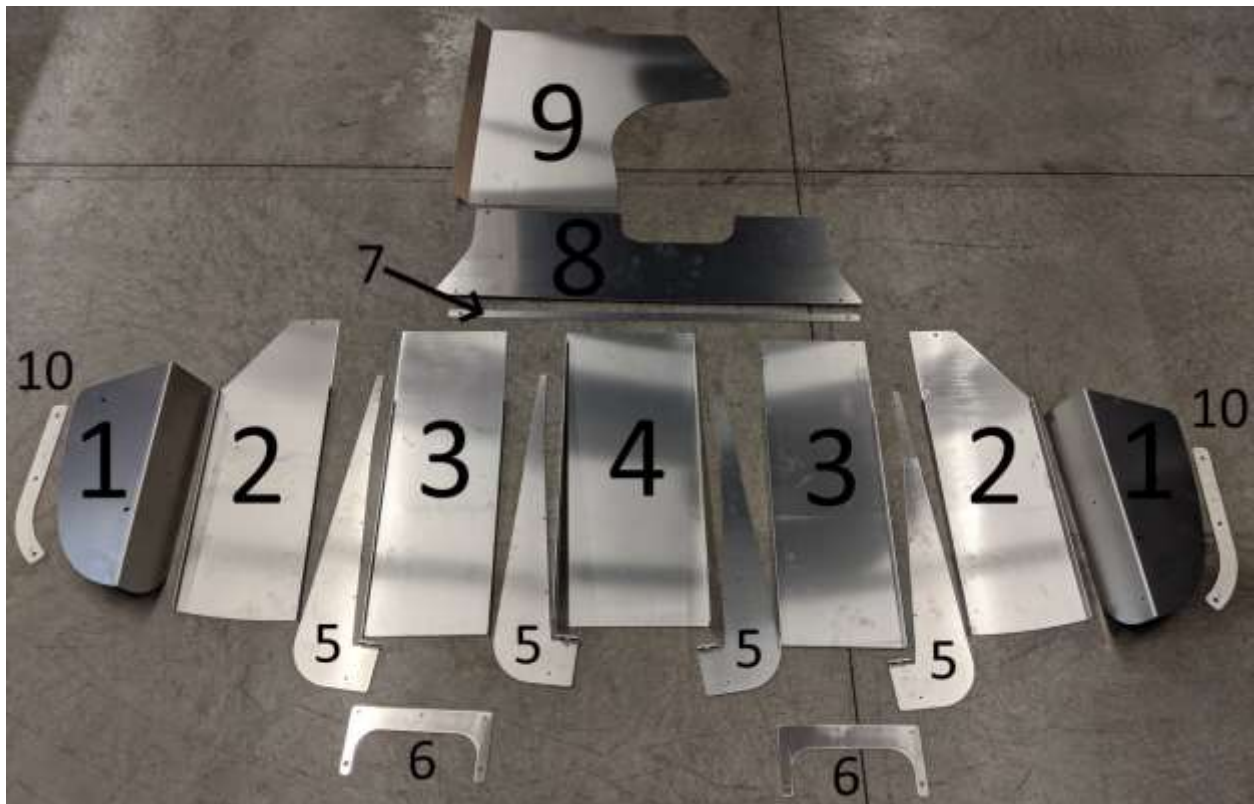


## Wilhelm Raceworks Rear Diffuser Assembly and Installation

### Parts List:

1. Side Plates (one each LH and RH)
  2. Outer Side Tunnel (one each LH and RH)
  3. Inner Side Tunnel (2x)
  4. Center Tunnel
  5. Center Plate (2x LH, 2x RH)
  6. Center Bracket (2x)
  7. Stiffener
  8. Crossmember Plate
  9. Transmission Cover
  10. Bumper Bracket (2x)
- 6x M6x20mm bolts (for side plates to bumper attachment)  
13x M6x16mm bolts  
20x M6 rivnuts (3 spares provided)  
50x 3/16 rivets (6 spares provided)



### Tools Required:

- Rivet puller for 3/16" rivets (manual or pneumatic, but some areas require a small diameter tip)  
Rivnut puller for 6mm rivnuts  
Drill with 3/16" and 23/64" bits  
4' level or straight edge

**NOTE: Use care when handling the assembled diffuser when it is not on the car. When installed it is quite sturdy, but off the car it is susceptible to bending in the length wise direction.**

1. Assemble center tunnel (item 4) with 2x item 3 (inner side tunnel) and 2x item 5 (center plate) as shown below. Note that these rivets pass through all three pieces. Also note that the bent flanges on the center plates should point away from the center tunnel on both sides.



2. Add the next center plate (item 5) and the outer side tunnel (item 2) to the assembly shown below. Note that the bent flange on the center plate points IN toward the center of the car and the previous flange this time. Repeat for the other side.



3. Install the side plates (item 1) as shown below. Repeat for the other side.



4. Install stiffener (item 7) across forward edge of diffuser as shown below. This is installed with a combination of rivets and rivnuts. The rivnuts will go through both layers just like the rivets and clamp the two pieces together.



5. Install rivnuts to center brackets (item 6) and bumper brackets (item 10) as shown. Be sure to make one LH and one RH bumper bracket.



6. Align bumper bracket to existing holes in rear bumper. If you have not already done so, remove the stock bumper extensions at this time. The rivnuts should press into the holes. Match drill two 3/16" holes in the bumper through the holes in the brackets. Move the brackets to the top of the bumper, and rivet in place.



7. Install the center brackets using four 16mm M6 bolts. Install two rivnuts to the forward edge of the crossmember panel (make sure they point up as shown), and install the crossmember panel to the diffuser with three 16mm bolts.



8. A second person may be helpful for the next couple of steps, but it can be accomplished by yourself if you are careful. At this point the stock rear grill must be cut off from the car if it has not been already. Hold the diffuser assembly up to the car, and loosely install six 20mm M6 bolts through the side plates into the bumper brackets. Support the middle of the diffuser with a long straight edge or level, and a couple of pieces of wood or similar support. Note that the four center plates should all line up, but that the two side plates should be slightly higher. Do not attempt to align all six plates.



9. Ensure that the diffuser is centered on the car and that the back edge is straight and everything is aligned to your satisfaction. From this point on it becomes harder to make adjustments. Mark the cross member through the two holes in the crossmember plate. Remove the crossmember plate from the diffuser, drill two 23/64 holes in the crossmember, and install two rivnuts. Reinstall the crossmember plate using 2 bolts to the crossmember and three to the diffuser. From the point on the crossmember plate can generally remain installed when the diffuser is removed, making diffuser installation easier.



10. Double check the alignment of the rear edge of the diffuser, particularly that all four horizontal plates form a straight line. Misalignment here will be highly visible and difficult to correct later. From inside the wheel well, mark or match drill the bumper beam through the diffuser brackets. I recommend doing one hole on each bracket at this time.



11. Remove the diffuser. Rivet the brackets to the bumper beam through the hole you drilled in step 10. Then double check the alignment of the brackets, and match drill and rivet the remaining holes. Make sure all four rivnuts point forward.



12. Reinstall the diffuser. Insert the front edge on top of the crossmember plate, and then install the four fasteners between the diffuser and the rear brackets. Then install the three fasteners to the crossmember plate, and the six fasteners to the bumper brackets. Leave all fasteners loose until all are installed, then tighten. Last install the transmission cover. This installs with two fasteners to the crossmember plate and two fasteners to the stock brackets at the forward edge of the engine bay.

**NOTES:**

1. The crossmember plate and transmission panel sit very close to the bottom of the transmission. You may need to bend the forward edge of the crossmember plate down slightly to ensure clearance, or possibly install a thin spacer (washer, etc) between the plate and the crossmember. With poly motor mount inserts I have not noticed any contact between the two with  $\sim 1/4$ " of clearance.
2. You may wish to make a plastic shroud to connect the side of the transmission panel to the frame rail next to the transmission / in front of the axle. See my blog at [wilhelmraceworks.com/blog/diffuser-build](http://wilhelmraceworks.com/blog/diffuser-build) for an example of how I did this on my car. A few rivets to connect the plastic to the transmission panel and a couple of rivnuts in the frame to attach the top.

Please contact me at [wilhelmraceworks@gmail.com](mailto:wilhelmraceworks@gmail.com) with any questions.