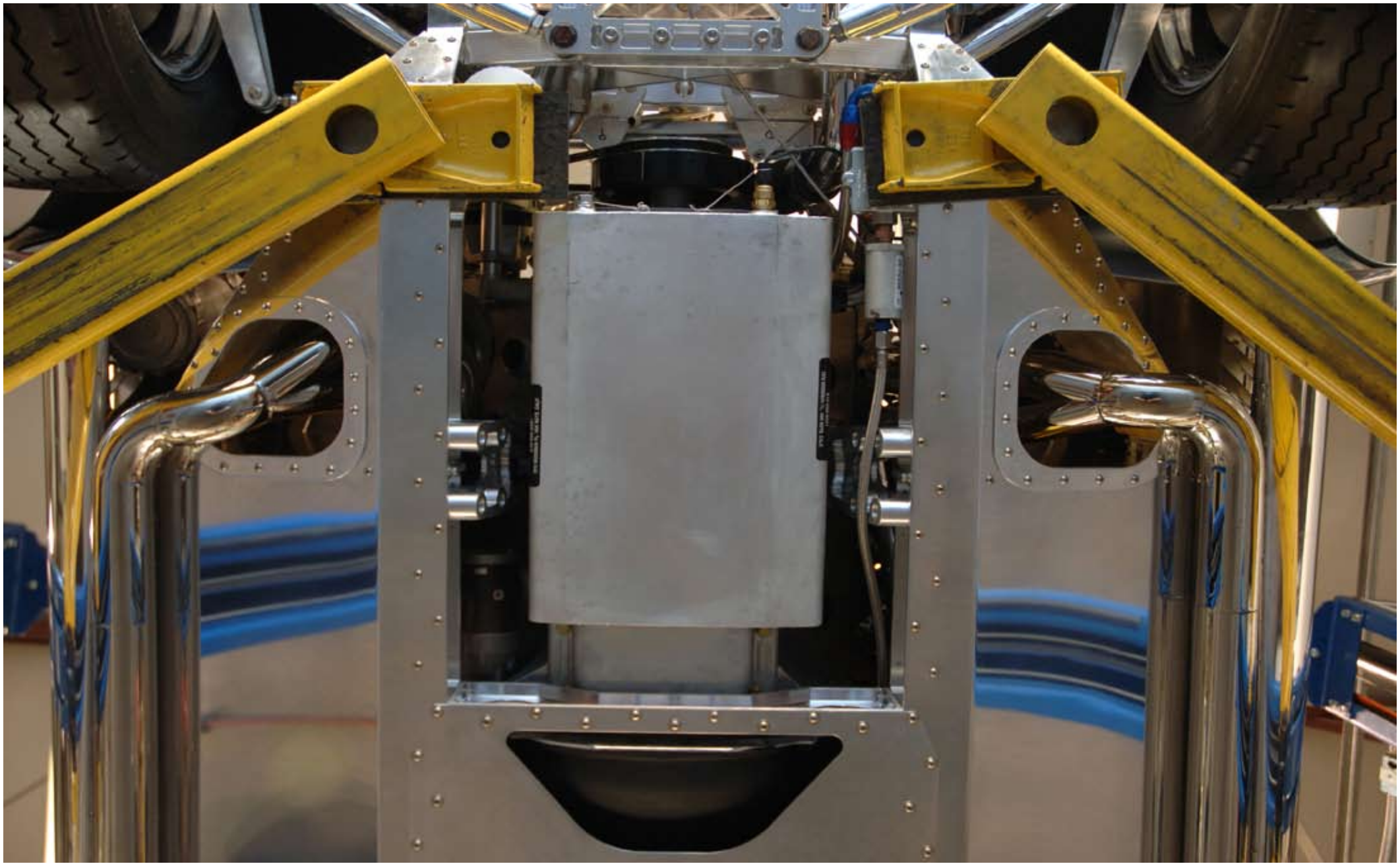
EXHAUST

Imagination rules the world.

Napoleon Bonaparte



The under-car exhaust was a huge challenge. Original side pipes are relatively easy, as all you need to do is cut holes in the body and run the pipes out. An under-car exhaust, however, has to be carefully planned out so the exhaust doesn't negatively affect the already low ground clearance of the vehicle. After dropping out of the engine compartment, the pipes immediately turn to the sides to run under the rockers. The area around the oil pan and bell housing was cut out to allow heat to leave the engine compartment.

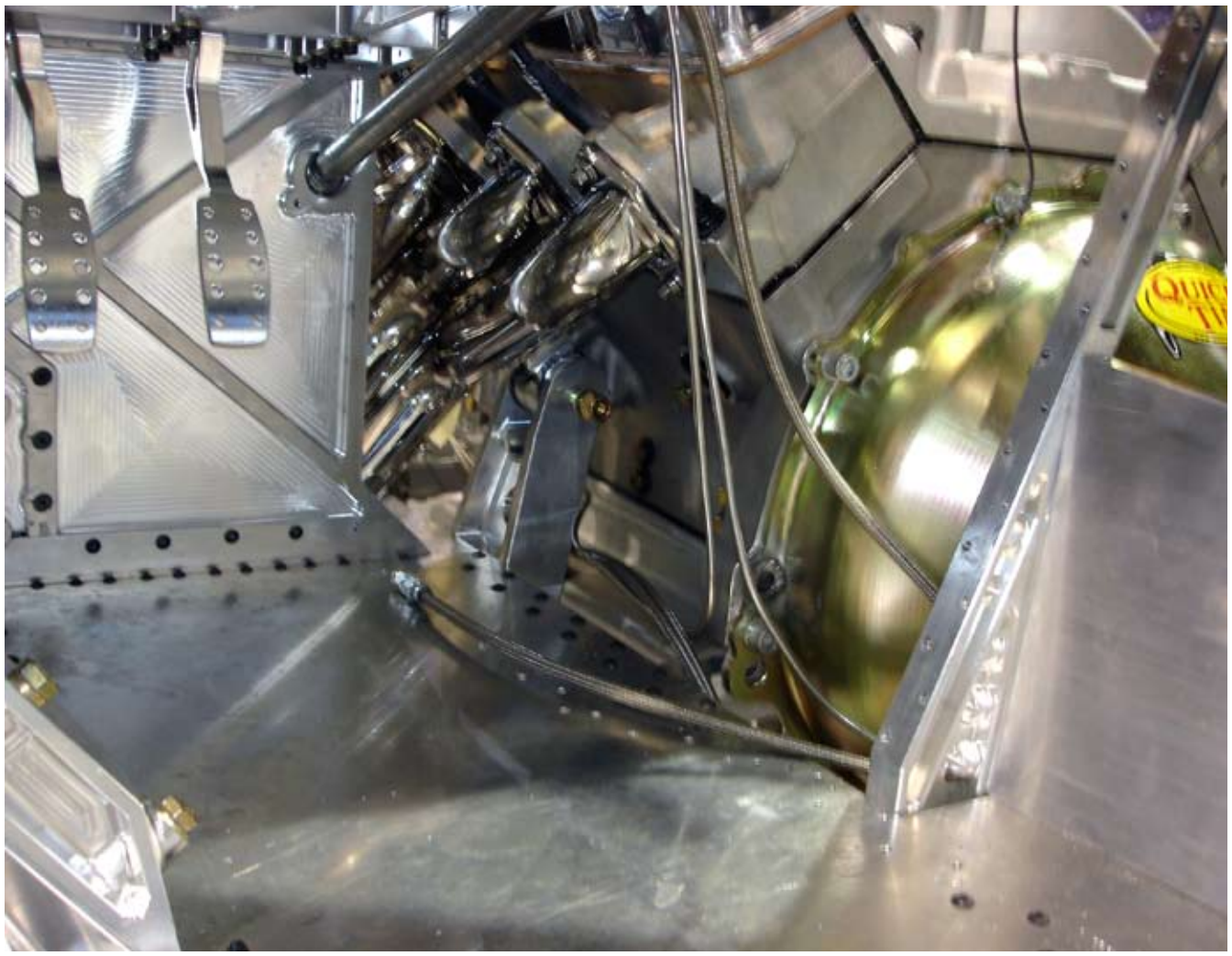
Our CNC tube bender will make extremely tight 1D (one diameter) bends. We needed tight bends to make the exhaust.

We bent up several "U" bends—and then began the tedious cutting and piecing of the exhaust system.

Here you can see some of the cut-up tubes as we were building the exhaust. The mufflers are 100% stainless steel. Even the packing is stainless steel wool—it won't blow out like fiberglass does. We polished the mufflers before assembling the exhaust system.

Moving the engine so far back posed large problems for the exhaust system design. The rear two exhaust ports had to have their exhaust pipes come forward before they could merge and make the turn back.

On the prototype chassis you can see the rear two exhaust ports are right above the driver's leg. Heat control was a very high priority. Here you can see the pipes running forward—before they merge.

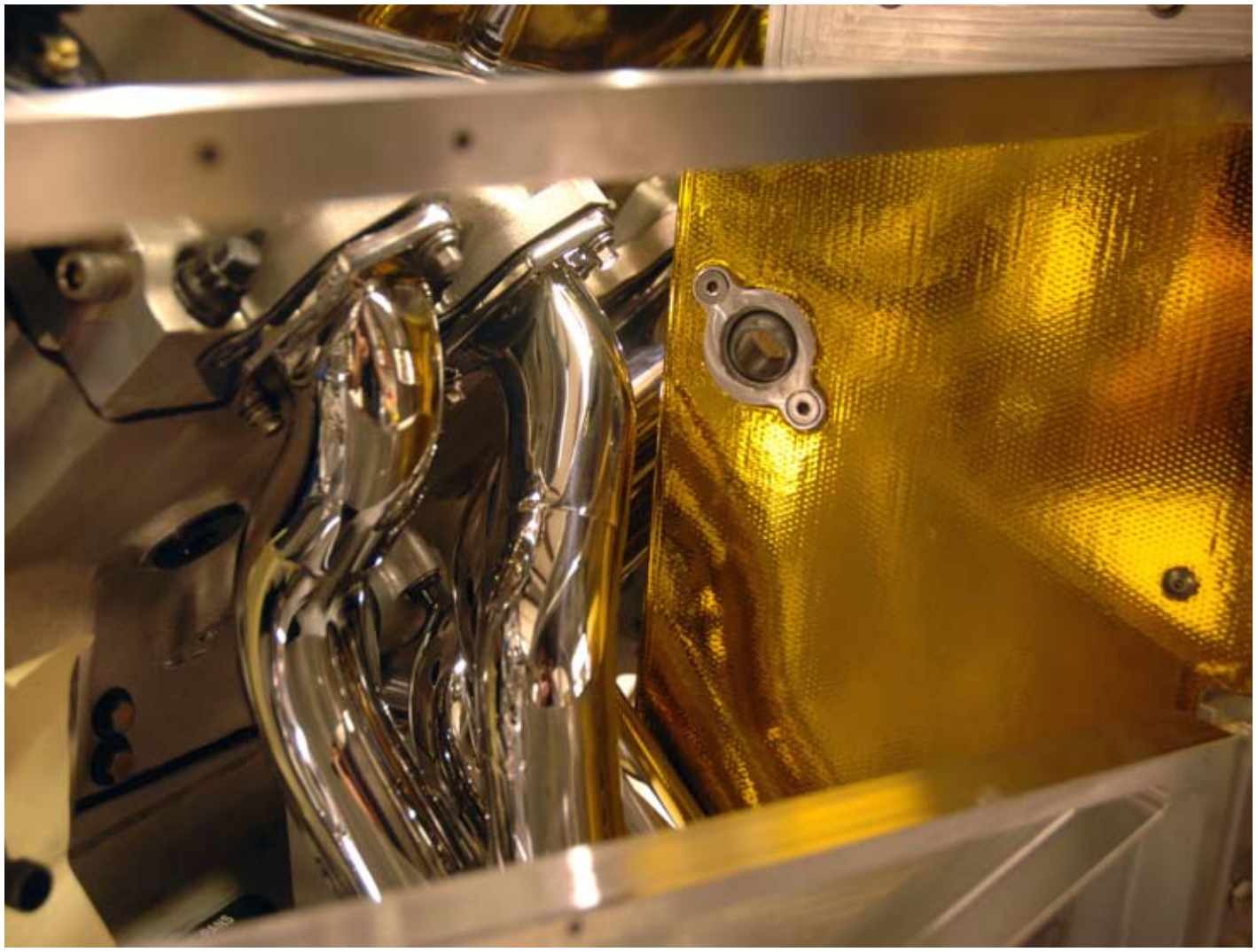


Notice how the merge collectors smoothly merge all four exhaust tubes (per side) into a single flow. We polished the merge collector separately because it is much easier as a separate piece. The purpose of the merge collector is to speed up the flow of the exhaust. Because the four merge into a smaller area, the exhaust must speed up—having a scavenging effect on the cylinder heads, which produces more power.

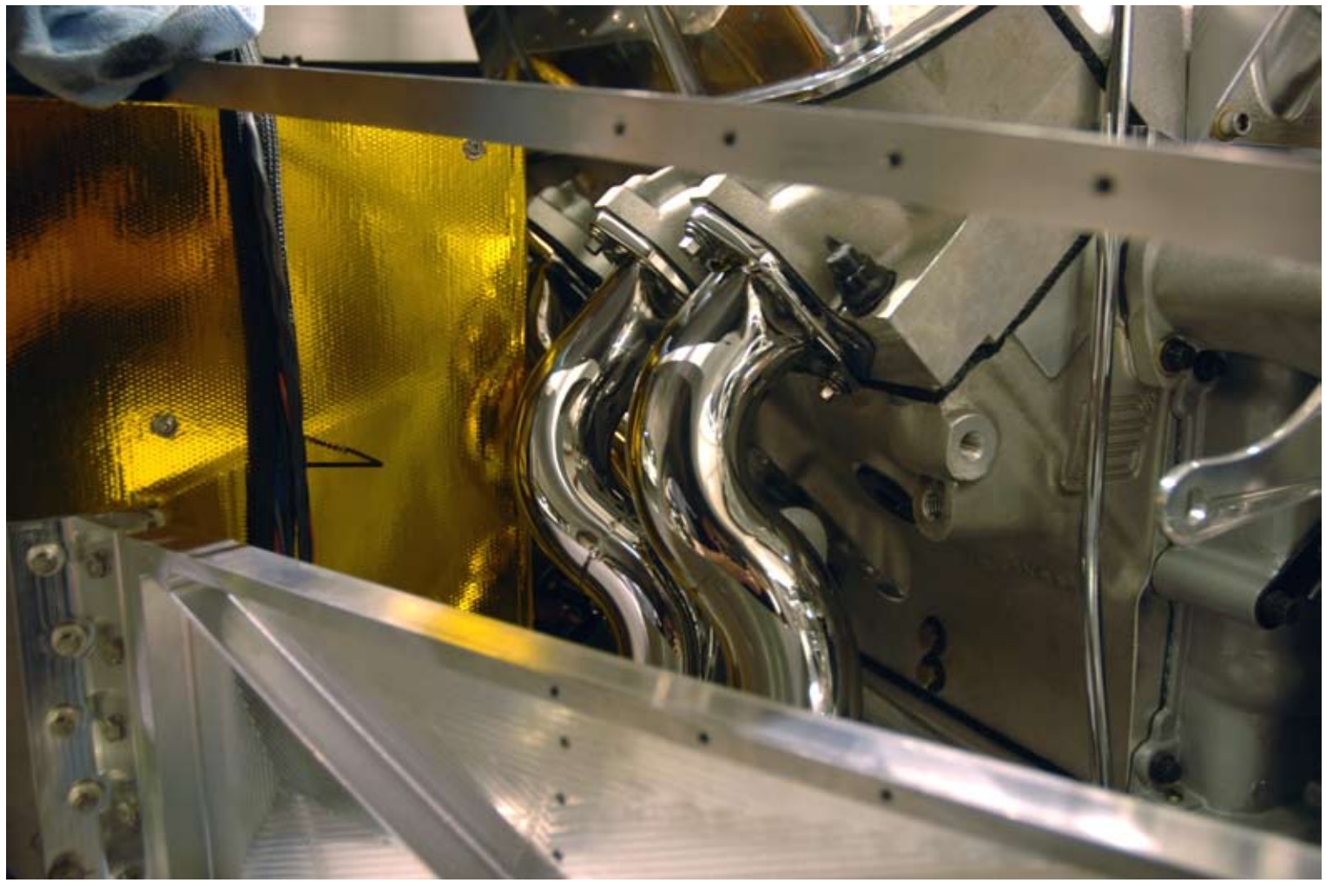
Here is a look inside the exit side of the merge collector. Notice the nice, smooth pyramid in the center of the four tubes. All burrs were sanded smooth for unobstructed exhaust flow.

There was very little room for the merge collector We tried three different lengths of collectors before we got all components to fit perfectly.

After we pieced the tubes together, we mounted each side on a head. Here we did the fine tuning to make sure all the tubes came together absolutely evenly so the merge collector could easily slide on and off.



We used three layers of heat protection for the driver: Kevlar backed gold foil, stainless steel heat shield, and Aerogel aerospace insulation.

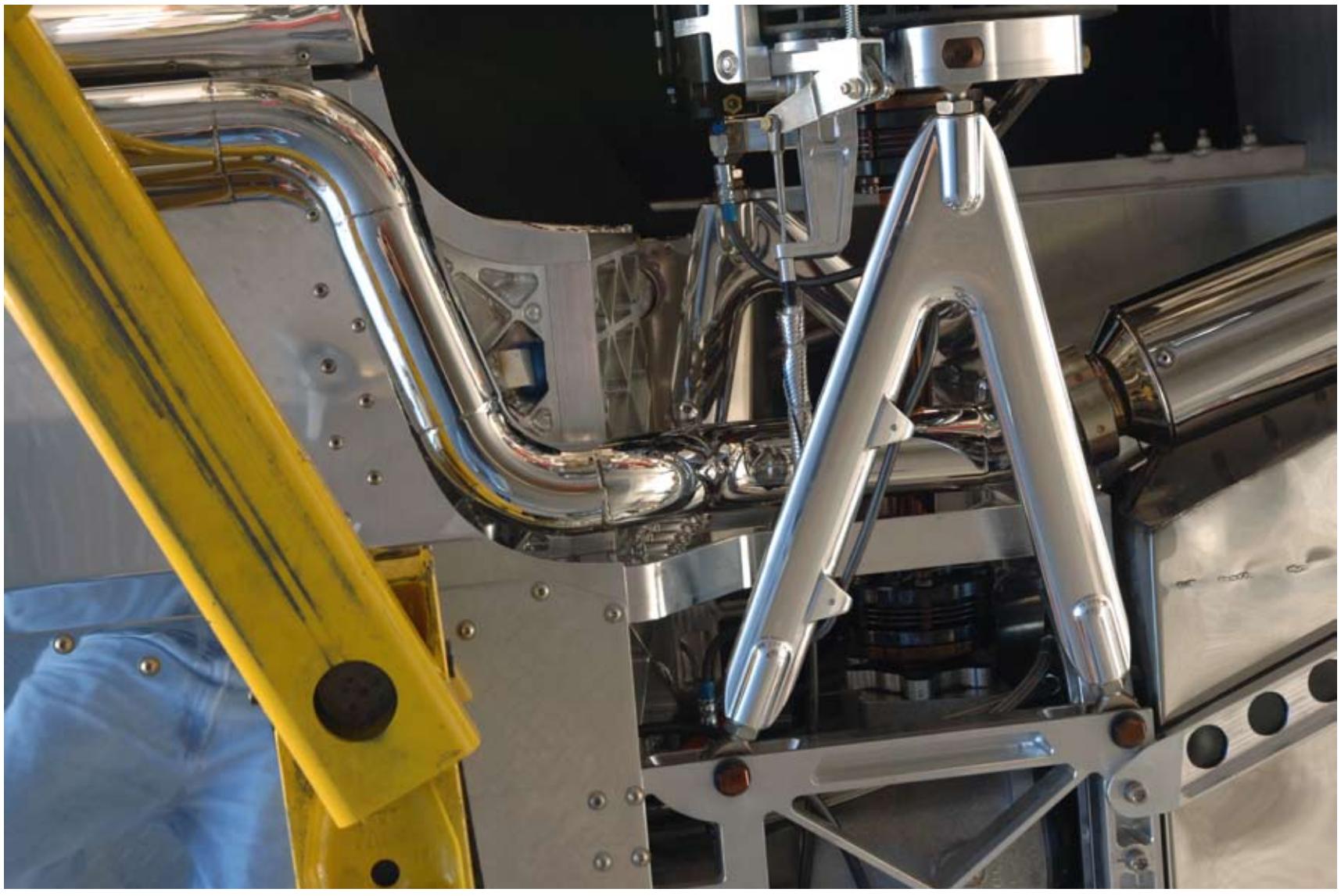


Passenger side exhaust tubes 1 and 2.

When the exhaust exited the engine compartment, it had to immediately bend out—and up—to the side of the car. There is more clearance on the edges of the belly pans. We made a special doubling plate to strengthen the exhaust cut out in the belly pan so it would not fatigue and crack.

The underside of the car where the exhaust swings back up to tuck tightly against the belly pan.

There are 5 different sections in this photo where the exhaust makes a turn to thread through the rear suspension.



The exhaust went over the rear lower control arm and under the 1/2 shaft. We did this to maximize road clearance for the exhaust.

Rear exit exhaust.

We ran the muffler as close to the gas tank as possible for minimum disruption to under-car air flow.

Once everything was fit, we polished the exhaust to a mirror finish. The finished exhaust was very light, compact—and beautiful.