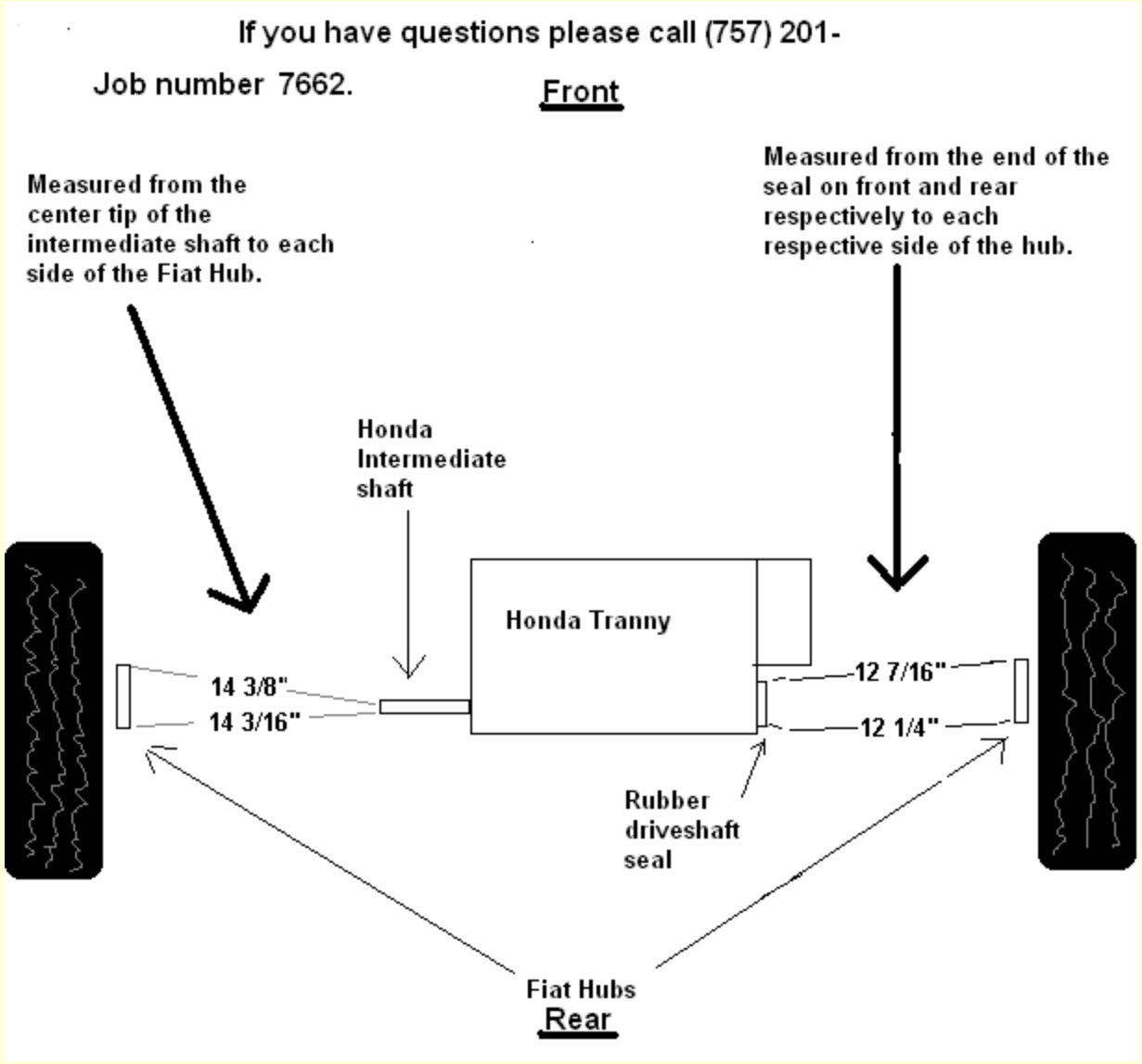
The Civic instrument cluster is a work in progress in this photo…but everything is connected and all lights and gauges work correctly except for the fuel gauge – still working on that one. Some of the wires that attach to this cluster come from the Fiat instrument cluster plug wires (example - the lighting, high beam indicator, fasten seat belt light, handbrake light, power and ground, etc) while others come from Honda inputs (example – speedo, oil pressure light, check engine light, temp gauge, tach, etc). I hooked up the turn signal lights to their respective indicators by splicing in wires to the wires that actually cause the turn signals to flash on and off. That takes care of the hazard signal as well. I notched out the bottom back of the rectangular instrument cluster housing to allow the Civic cluster to fit.

A few weeks later and the Instrument Cluster is mostly finished and I painted the dash while I was at it. I used ABS plastic sheet to trim in the cluster. I finally hooked up the Fiat's fuel gage wire to the Civic's fuel gage but I'm getting inaccurate readings so I'll have to figure out a fix for that at some point.

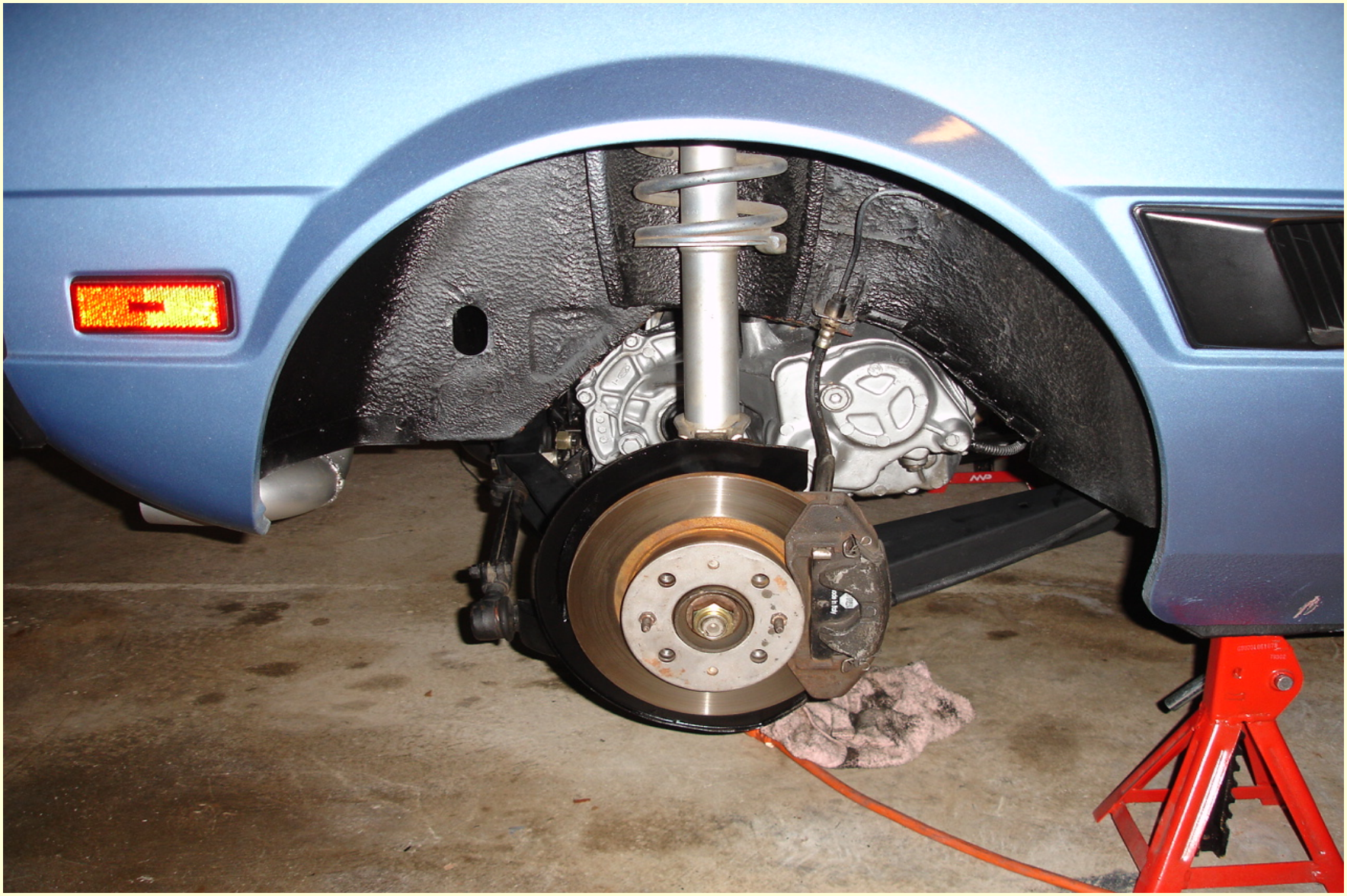
My engine package came with the drive axles included. These are the same axles used on USDM Integras from ’90 to ’93 and maybe even later years as well. I sent them out to a specialist to have them shorten the Honda axles and then mate them to the Fiat Outer CV joint. When done they bolt right up to the X’s hub. I’m hoping the 6 hex bolts of the Fiat outer will handle the additional power and torque (not that Hondas are known for torque). That has yet to be seen but so far so good. UPDATE: 10,000 + miles and no problems so far.

This is the diagram I sent to the drive axle fabricator to build the custom Honda/Fiat axle.



Six hundred and thirty bucks later, this is the end result. These are the new drive shafts with Honda inners and chrome moly raced Fiat outers courtesy of The Driveshaft Shop in North Carolina. Almost there now…things are starting to get exciting…

To ease the fitting of the drive shafts, I removed the upper shock bolt from the hub assembly and pulled the hub outwards. Then I slid the axle into place ensuring that the set-ring properly engaged in the tranny. Next, I applied Loctite to the six hub bolts and torqued them to spec.



The car's cone shaped K&N air filter, connected by a flexible 3" hose, is located near the passenger side air intake to draw as much cold air as possible. Overflow tank is from a Porsche 924. I ran a ¼" line from a fitting screwed into the Honda's thermostat bleed plug opening to this tank and another hose connects to the old Fiat heater hose line. This allows air to be purged from the cooling system. Thanks to Phil Young for this solution.

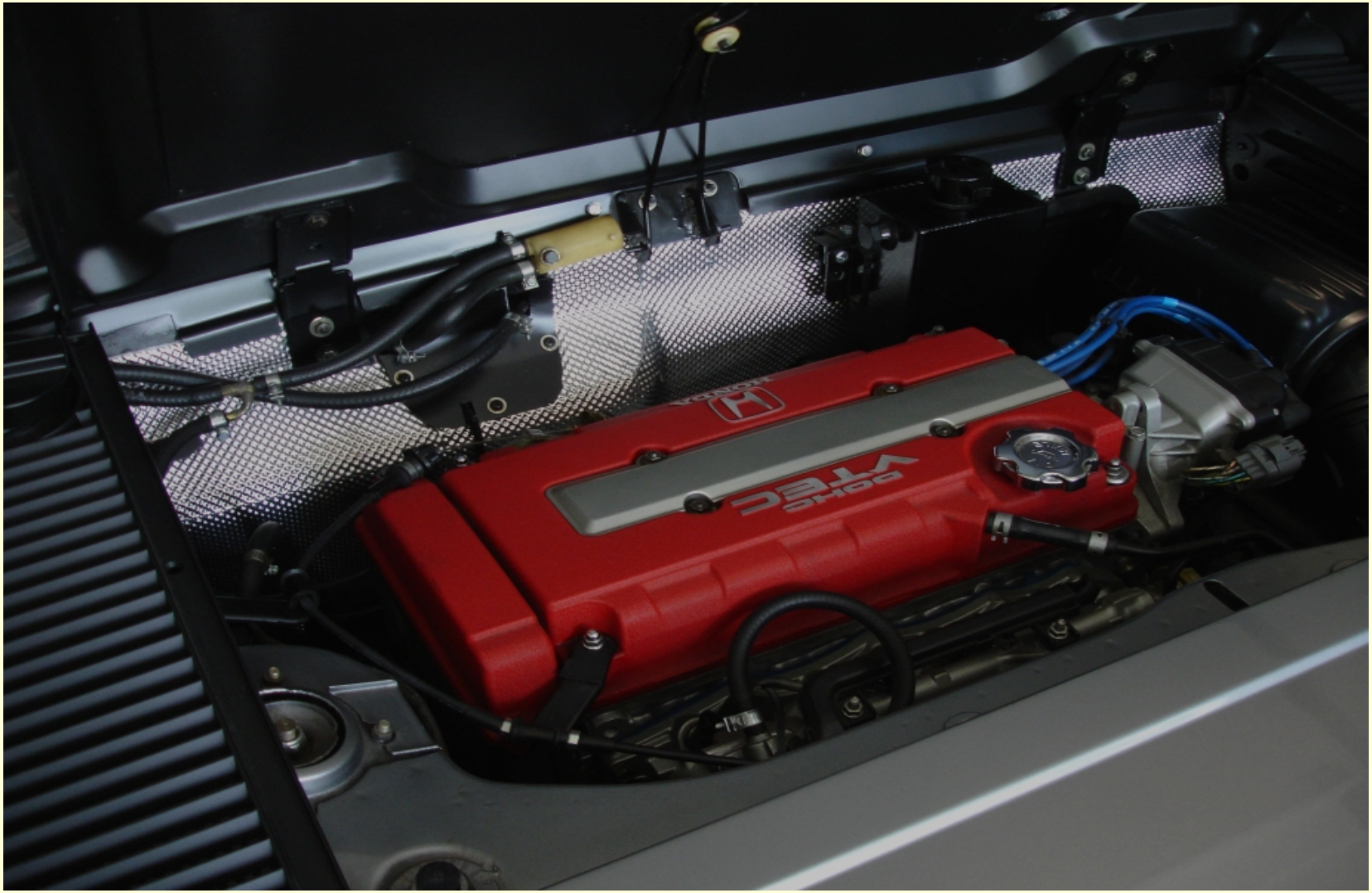
This view shows the Porsche 924 overflow bottle and the flexible hose for the K&N filter located in the air duct. In the future I'll probably replace the flexible hose with aluminum tubing.

2 Years later…

Well the car with the new engine has been on the road for a while now and I haven't had any serious issues. In fact, I've enjoyed about 3k miles of trouble free driving. 37 mpg highway fuel economy (premium gas). No overheating either. Everything has held up well but I've made a few changes since then. The biggest being the removal of the B16a and in its place I dropped in a B18c Type R. While doing this, I removed the 3 engine/torque/tranny mounts and replaced the very firm black bushings with slightly softer red urethane bushings to minimize engine vibration transmitted to the car. The other change I made was to redesign my torque mount. I am now using a 99 Civic Si torque bracket (Honda part) and it attaches to a mount that rests on top of the rear cross-member. The previous design was bolted/welded to the bottom of this cross-member. This is a much better design in that no welding is required (It's removable) and it is stronger too. I also made changes to the exhaust, and made some connections easier to remove by using electrical quick connect plugs.

In this photo, the B16a engine is out of the car waiting to be sold and the JDM B18c engine has been installed. If 170 horsepower is fun, 200+ horsepower must be funner yet.

The B18c engine before my conversion to a B20 VTEC. I've added a black aluminum overflow tank which replaced the old plastic Porsche unit, added the factory intake air box and intake tube (this keeps the intake noise to a reasonable level), and replaced the firewall insulation. Also changed the engine cover to a 1974 model.



The B18c runs a 2 ½” exhaust. This photo shows a MagnaFlow 18” muffler. This proved to be a bit loud so it was replaced with a 24” muffler. That’s about as big as you can go given the space provided.

B20 VTEC

- *Still not* quite satisfied with the power of the B18c (you get used to it after a while) and looking for something to do, I pulled the motor once again over the winter of 2016 and upgraded it to a B20 VTEC. I used the 2 liter block from a JDM Honda CR-V along with a conversion kit from Golden Eagle. New Wisco forged pistons and Eagle connecting rods were used, along with a Cometic head gasket, bigger injectors and tuning via Hondata S300. The B20 offers better torque than the B18 and that was the main reason for this effort – that and the fact that I was really bored at the time.

Future plans

Overall I'm pretty satisfied with the setup as it is now. However, there are still a few things that I'd like to improve on.

The engine still transmits some vibration to the car at idle. To mitigate this I plan to replace the custom red urethane mounts with stock Honda rubber mounts. I'm going to replace the main transmission mount first and see how things go before replacing the main engine mount (a much bigger job). The car, with the B20 VTEC, puts out close to 225 horsepower and allows me to use second gear when accelerating from a stop. With a setup like mine you can expect 0-60 times of about 5 seconds. A little better if you launch harder and if your transmission is equipped with a LSD.

Another project I did over the winter was to replace the fifth gear of my S4C transmission (.848 ratio) with a .714 ratio 5th gear (factory Honda part). This new 5th gear is even higher (lower?) than the 6th gear in a K20 and allows for relaxed highway cruising at 70 mph.

Meanwhile I still have the old B18c block and sometimes I dream about doing a turbo build with that block as the basis.

But for now I'll budget my money to more useful things like retirement savings ☺️

First Landing State Park in Virginia Beach summer of 2016