

Aloha Michael-

RE: Tires

I apologize in advance for the length and detail of my reply.

My understanding is that you have a base 10 automatic without a handling package. So if you have the base wheels that look the same as the Handling Package wheels, then you have 9.5" wide fronts with not much offset, and your rears are 10' wide. You said you are running 315/30/19's. You didn't mention any different staggered size for the front, so one would assume you're running that tire square, meaning all four corners. Your rims are too narrow for the 315/30/19 Michelin Pilot Sport Cup 2 tires, both at the front and rear. I find it hard to believe that a tire mechanic mounted those tires on your rims and installed them on your car, given the section width of 12.6, you would be rubbing the suspension up front. But let's assume you got them wrangled on the narrow rims and maybe used spacers up front to keep them from rubbing. I've had 345/30/19's on the rear of my Porsche 991.2 and 295/30/19's up front. Where there's a will, there is a way (and a Louisville Slugger). Incidentally, that Louisville Slugger out in our shed is my wife's favorite tool in her imaginary toolbox. She likes to imagine bashing little, lame looking gas-powered cars with it. Her daily driver is a Ford Mustang Mach-E GT, and after driving nearly every Porsche model as a daily driver, she is certain that the Ford EV is the best car she has ever driven. The problem with what you are doing is that the rim isn't wide enough to support your car's weight under track cornering loads. The tire track width of that tire exceeds the width of your rims. It therefore rolls both car and tire over, under load, to such an extent that the inside tires lose excessive cornering ability, which is already low due to the load being mainly on the outside tires.

If you have the Handling Package wheels like I do on my automatic 10-speed base Dark Horse, then I can see that tire working better since you would have 10.5 upfront and a ton of offset and 11' wide in the rear with the same offset. Camber plates would allow you to move the center of the front strut inboard on both sides, providing adequate negative camber and relocating the outside tire top shoulder within the fender, thereby avoiding a fender rub that would occur if you leaned hard on that tire. Still, 315 upfront seems too risky. Perelli made their tire for the Dark Horse in conjunction with Ford. The sizing numbers on the tires are misleading. The rear tread width on the Trofeo RS is a whole 1" narrower than the Michelin PSC 2. The same applies to the fronts on the PSC 2 305/30/19. The idea is to keep the tire patch between the edges of the rim. Cars are faster due to better handling and can maintain their speed longer, thanks to improved tire wear, which saves the owner money in the long run by reducing the frequency of tire replacements.

Read on if you want to know more...

On a cool March day at Sonoma Raceway, the track went hot at 8:00 a.m., with a temperature of 56 degrees. We were using the Trofeo RSs. On our third run, at around noon, the temperature had reached 65 degrees, and halfway through that third run, we got a strong

vibration. The event was a NASA event, so a tire shop was set up in the cold pits. One of the rear Trofeo RS tires had developed several blisters. It took some time, but they located us a set of Toyo RR's 295/30/19's for all four corners. By the time the exchange was complete, the day was over. However, we were registered for the next day, so we started fresh in the morning with stickers.

The next day, the temperature was similar, and we just scrubbed the tires in during the first session. From then on, the car was noticeably faster. We were able to start using 7th gear due to the higher speeds. Back in December, we were consistently running the same 2.52-mile course in 1.50s on the new Trofeo RSs, but it was very cold; in fact, we had hurricane-force winds, and the track lost power, so the safety crew shut the track down for two hours in the morning. In the pits, all the trash cans got knocked over and were rolling away, and even the porta-potty on pit lane was sliding down pit road. It was wild, but the Base 10 speed Dark Horse stayed connected to the track. From the cockpit, I didn't notice any strong winds affecting our car as it drove smoothly on the race line after the track power was restored, despite the strong winds still being present. That December, the tires didn't blister because of the chilly day. At the NASA event in March, on the Toyo RRs, I set up the in-car track timer in the afternoon and achieved a time of 1.47 seconds using Sunoco 100 octane unleaded fuel for the first time, which required an upshift to 7th gear. On the second full tank, we got a notice on our dashboard that the Dark Horse had been fully untethered. So I lined up last, waiting for the lead cars to come around turn 11 before I took off. With some open track, my first lap was a 1:43.8, and my second lap was a 1:43.3 on the 2.52-mile course, which gave me an average speed of 105.512 mph for that second lap.

Interestingly, as a reference, when NASCAR visited in June this same year, SVG, the Kiwi, took the pole. NASCAR uses the shorter course by utilizing the backshoot and Turn 7 Bottleneck, bypassing regular Turn 4 to eliminate the most challenging and longest turn, which has a blind entry, known as the Carousel at Turn 6. On the short course, SVG laid down a pole-winning qualifying top speed of 96.040.

Please keep in mind that I was short-shifting our automatic transmission at 6,000rpm and manually paddle-shifting, using only 5th, 6th, and 7th gears to prevent the transmission from entering the red zone and going into limp mode. We are currently completing several modifications and adjustments to help reduce the operating temperature of the automatic transmission. In the Formula Russel cars, I was consistently running low 1.42s on the 2.52-mile configuration. I had the opportunity one day to drive the Shorter NASCAR course while NASCAR stock cars were testing. I would easily drive by them with my 150-hp rotary Mazda engine, since my open-wheel car only weighed 1,000 pounds. Yokohama sponsored the Russell Race Series. The Yokohama slick and the Toyo RR on the base Dark Horse have the same feel and predictable characteristics, and both excel with a lot of slip angle. Both maintain a consistent pace for several heat cycles, then taper off with plenty of rubber left to hone your skills.

NEARLY COMPLETE WORK on the 10-speed automatic quasi handling package base model.

1. Removed both Cats and replaced them with equal-length headers. (The cats were sandwiching the transmission and could reach 1,600 degrees, and were darkly discolored from excessive heat.) There is a potential 70 hp gain there.
2. Removed the thermostat valve that only opens at 180 degrees to allow transmission fluid to flow through the transmission cooler.
3. Removed the small OME transmission cooler and replaced it with a larger one with a 650cfm fan and mounted it with custom-fabricated aluminum brackets tied to existing bolt holes from the factory and positioned it in front of the AC condenser radiator coil, which is located in front of the engine coolant radiator and fan.
4. Installed a transmission cooler fan "switch" inside the driver's cockpit, which will be flipped on as soon as we fire up the engine on pit road.
5. Lastly, we are replacing the two OME cone-shaped air filters with the blue Steeda ones that they claim improve torque by +2lb-ft and +3hp throughout the entire rpm range during a 3rd gear pull on their dyno up to near 7,000rpm.

FYI, the ToyoRR's drop off after about 7-8 heat cycles. I suspect the replacement Toyo R's will be similar to the Toyo RR's, as the price point is similar at just under \$1,300 per set. I usually run Hoosiers, and they are fast all the way down to the cord, but they cost twice as much as the Toyo's. I've used them since the early 2000s on my 2,300lbs '73 911E, back when they were R6 & A6. On my 993, I used both 80 UTQG Michelins and a soft, intermediate Dunlop compound. With the Michelins at California Speedway in the dry, I could drive WOT through NASCAR 1 & 2 with an exit speed of 160mph. They were slightly slower than the Hoosiers but lasted 50% longer. At a POC (Porsche Owners Club) 4-hour enduro, I raced with the UTQG 80 Michelin's in the dry.

My co-driver drove for the first two hours and pitted, allowing me to take over the driving. All we needed at the halfway point was fuel and a front right wheel change on the California Speedway Roval. The right front tire was starting to show signs of wear, with cords becoming visible. The other three tires made it the full distance. (They were Michelin's and cost top dollar). The Dunlops were the most superior tire I have ever driven on in the wet. At another race, I qualified dead last at California Speedway in the dry on them. Then, a thunderstorm hit just before the start of the PCA(Porsche Club of America) Porsche Club Race, and I drove our 993 up through the entire field, passing the likes of Tommy Kendall (he had wrecked, but the track stayed green), and won the race. Now, the A7 is similar to the Trofeo RSs, but the A7s are significantly faster. Trofeo RS is a good choice for auto crossing if you're just looking to arrive and drive. Both the A7 and Trofeo RS blister on a road course if you run consecutive hard laps, even on mild-temp days in a 3,100lbs Porsche 991.2 with the A7s and 3,900lbs Dark Horse with Trofeo RS's.

The Hoosier has a more squared-off edge than the Toyo, and there could be some rubbing issues with the Dark Horse; I am not 100% certain of that. I would use the 295/30/19's square if I went with the Hoosier. However, I do know that the Hoosier is susceptible to punctures, especially as the rubber wears thin. Additionally, Hoosiers require a minimum of -3 degrees of negative camber due to the grip they create, which causes the suspension to compress and

generates significant body roll, resulting in heavy tire wear on the outside shoulders of the fronts, even with -3.5 degrees of negative camber on our 991.2. Hoosiers require being flipped on the rims after each track day to get the most out of them because of the normal uneven wear across the tire. In California, flipping and a balance run $\$55 \times 4 = \220 , as a hidden extra cost of using Hoosiers. The Toyo RRs don't require much maintenance. A directional change on a non-directional tire will cause some loss of speed, since heat cycling creates a preferred direction of rotation.

With all that being said, we are going to stick with the Toyo RR's with our Automatic base Dark Horse. After 3 days of track driving on the same set of Toyo's, albeit they had lost all their speed, there was still a lot of rubber left with even wear and only -1.5 degrees of negative camber in the rear. Like I mentioned, our Automatic is also a base model Dark Horse. We added adjustable camber plates up front and -2.2 degrees of negative camber with the handling package wheels all around. I might be wrong, but I believe that the lighter hollow swaybars and softer springs on the base model are a faster setup at Sonoma. A car with mechanical grip is essential for driving and using racecraft, so the suspension needs to be compliant and soft, rather than stiff and/or generating massive downforce, which would make that type of car essentially stuck to the track like an F1 car (which is also definitely fast). The one caveat on the base model is the smaller rear wing. I pointed a driver by to the inside of Turn 1 at Sonoma, and he took the air off our Dark Horse. Our rear end stepped out completely sideways at 123mph. My hands were full with an opposite lock. However, we have excellent rear-view vision with the base wing, allowing us to see everything behind us, which gives us excellent spatial awareness. So from now on, the faster cars can wait till the exit of the slower corners to pass because we're staying on the race line at high speeds. Another unintended benefit of the base wing is at the top and turn-in point of the Carousel of Turn 6. If you are approaching a slower car, you can follow them into the blind corner entry in their draft on the center line of the track. As soon as you add the wheel, the Dark Horse rotates 40-50 degrees, and you can go directly back to wide open full throttle (WOT) and drive our car from the top to the inside apex at the bottom of the hill, completely clearing and pulling away from the slower cars we pass at the top of Turn 6. The early rotation extends the straightaway with a WOT run from the top of Turn 6 all the way up the drag strip to the braking zone of Turn 7, making it the longest straightaway on the long 2.52-mile course. Making Turn 6 the most critical turn on the track. Although once the tires wore down to low grip, we had a ton of fun rotating our car around every turn, learning what the car liked and its areas of strength and weakness (its weaknesses weren't much). That knowledge, with new stickers and an automatic transmission that doesn't overheat, is going to pay huge dividends.

What this all adds up to is that, being previously unsorted on day-old tires and fully untethered with 100 octane, we were already nearly as fast as a completely sorted GT3 RS with an experienced driver. (I snuck a peek through the window of the Porsche team instructors' GT3RS, and saw his time displayed on his Garmin; his best lap time was one second faster a lap than ours in the low 1.42's.)

We also have a 6-speed base manual Dark Horse, and I love the Pirellis that come with it on the track. When you start sliding them around at speed, they get hot and sticky. That car is

track-ready off the lot—no sorting needed. Simply turn on the computer-operated downshift blip mode. The Perellis are faster than the 3-day-old Toyo RR's by 4 seconds...but 5 seconds slower than a new set of Toyo RR's for that first 7-8 heat cycles in an unsorted automatic Dark Horse at its best to date in the low 1.43's. The manual is a lot of fun, but giving up a tenth of a second per shift is like throwing 2 seconds per lap out the window at Sonoma.

If you are stuck on having a track-only tire on a base Dark Horse with base wheels, then the Toyo PROXES 888R is your best bet with a UTQG of 100. 245/35/19 up front and 265/35/19 in the rear. Or be a ginny pig and try out the new Perelli ZERO TROFEO TRACK in 245/35/19 up front and 265/35/19 in the rear. (The Perelli is pretty much a full slick) As always, when you deviate from manufacturer recommendations and use tires that are not specifically designed for your vehicle, you may encounter unwanted rubbing and potentially cut a tire, which could lead to a wreck or even just hot-spot a fender, damaging the paint (which has happened to us). So, be careful and gradually increase speeds slightly, lap after lap. Keep your ears and nose alert for any unusual noises, smells, or sensations through the steering wheel or up through your seat, and reduce speed and pit immediately if you notice something suspicious. You can use the hot pits to do this and reenter the track if everything looks good. Lots of drivers are working on and testing their cars, so it's common to smell or hear somebody else's car and think it's yours. But don't risk it, reduce speed, and check out your car in the hot pits. If you have an issue, then exit into the cold pits. Safety First!

TIPS:

1. Never set your emergency brake after hot laps. Put it in park or first gear if you have a manual transmission, and leave it in that position **WITHOUT** the parking brake engaged. Your brakes will be blazing hot, and you'll warp your brake rotors. Additionally, bedding in new pads generates massive heat, and they will smoke. If your car is street legal, leave the track and shift up to top gear for a 6-8 mile cool-down drive. I do this after every session anyway, for good measure, because I'm using the maximum option gauge display and can see how hot everything gets. One lap, or even half a lap if they give us the chequered flag at turn 7, is not enough to cool down a Dark Horse that's being pushed for a 20-minute session, and when you back off the gages spike, especially that automatic transmission gage. The Dark Horse is dependent on airflow to stay cool at speed. So backing down doesn't help. Driving down the highway at 60mph in top gear works the best to cool things down quickly.
2. After cooling down your Dark Horse, top off your tank at the track pump if you are using the 100 octane. The track pump traffic is usually cleared out after a long cool-down on the street, and it's smarter than filling up directly off the track and heat-soaking your car while filling it up with fuel at the same time. Otherwise, scope out a regular gas station off-site and fill up; save some money and integrate that chore into your cool-down.
3. Open your hood once your back from your cool down in the shade of your garage space if your track offers that option at registration on MSR. as a driver being out of the weather will help you stay calm, cool, hydrated, and out of the sun where you can sit in your folding chair you brought along sipping on your favorit cold non-alcoholic drink form your cooler.

4. Check your wheel torque before each session. If you have wheel locks, don't torque the wheel locks. (They can snap off, and then you'll have an issue.) It's best to remove them and go back to 5 regular lugs per wheel. Anyway, the first time you drop a wheel in a hole before or after a rumble strip, you'll bend the rim and have to replace it. Think of them as consumables.

5. Stay on top of your oil level. The Dark Horse uses up engine oil at WOT.

6. Near the first 1,000 miles, I switched to Sunoco 100 octane unleaded, and on the second full tank, we received a notice on our dashboard that the car was fully untethered. That's when our car went from 1.47's and five gallons of 100 octane per session to 1.43's and six gallons of 100 octane per session. That's a 20% increase in fuel consumption. It sounds logical to us that making more horsepower and torque requires more fuel. Assuming the car is smart and can recognize that the knocking lifter threat is gone with the 100 octane, then it may have the intelligence and ability to advance the timing as well as adjust the air-to-fuel ratio. Whatever you think, the bottom line was 4 seconds faster a lap and one more gallon of fuel burned during the same time frame as before.

7. If your track has a similar corner like the Carousel, a 180-degree downhill left-hander, and your fuel tank level gets low, the fuel pick-up in the tank will suck air, and your engine will stumble down or up the next straightaway. The solution is to top off your tank after each run, ensuring it's full every time you head out for a session. The Toyota GRs have the same issue.

8. Turn off your AC on the track or at an auto cross, and always keep all your windows down. The AC pulls horsepower to run the pump and amps to run the fan, and the condensing coil, placed directly in front of the central engine coolant radiator, can reach elevated temperatures during its function of heat exchange. I typically don't drive during the hotter times of the year, so I'll crank up my heater to pull even that little bit of heat out of the engine compartment.

9. The insurance through Hagerty with RLI is a lovely security blanket, but buyer beware. The policy is worded to avoid paying out. That goes for all the insurers. It only allows for two reportable accidents within three years. The operative word is reportable. That's intentionally vague. If you are recording lap times, you are not covered unless you pay an additional fee for time trial insurance. You must obtain an officially signed incident report from the organizer if you are involved in an accident. If another car is involved and you are at fault, you'll be denied coverage. And remember, the insurance is for HPDE, so make sure you attend all the download meetings. Additionally, you must list the MSRP as the value of your car, plus the cost of all modifications and their associated expenses. Your computer data will be analyzed to verify any recorded data and compare it to the empirical evidence. One of the insurers, Open Track, will review your bank account records and tax information for a period of time before and after a reported claim to help prevent fraud and recoup lost funds. You give up that right to privacy when you sign the document. So read the fine print. It sucks, but that's the world we live in now. RLI has a "Superior" solvency rating of A+ from AM Best, the highest possible score. That simply means there is a lot more money coming in than going out, in fact, at the best possible

ratio for a company on the New York Stock Exchange. Eventually, you will be in a wreck. It's impossible to avoid this inevitable fact. Most accidents involving other drivers may or may not be your fault, but every time, the other driver will always say they are not at fault and point the finger away from themselves. Bottom line, we all sign a release of liability, making us solely responsible for our own equipment and life. An HPDE track day insurance provider that sells liability insurance is a scam, borderline fraudulent, and certainly misleading. No legitimate personal injury attorney would take on a case after their client signed the MSR "Speed Waiver" with a photo on our smartphone. You, I, and everyone there have signed our lives away.
FACT!!!!

Lastly...

10. I do have my iPhone connected and listen to my Apple Tunes playlist at a reasonable volume so I can hear my music when I'm on the pit lane, or if a full course yellow or red flag comes out. I once cranked up a sweet jam as I was entering the pit lane for a pit stop, and I halted in my pit box, my pit crew started busting up laughing since they were used to drivers being stressed out instead of jamming to Ludacris' "Rollout My Business!"!!!! Needless to say, they filled me up with "A couple of cans of whoop ass" and sent me on my way!!!!

Ciao