Newsletter of the Performance Corvair Group (PCG)

CORVAIR RACER UPDATE

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CORVAIR ALLEY NEWS, by Rick Norris

Another edition of the Performance Corvair Workshop has come and gone. This year's new venue was the Corvette Museum in Bowling Green KY. The many times I passed by this place and told myself that someday I would visit there were numerous but now I can check that box off. There is way more to the museum than I thought or even first meets the eye. I highly recommend it as a destination. We had a special briefing and passes for all weekend if we wanted to go back through for another look see. The folks there were very helpful with good attitudes even if some of them weren't sure what the hell a Corvair was, definitely nothing new to us.

We had a really nice big room, big enough to drive into for easy unloading with a professional audio system and a stage for the presenters. Lunch was served on site as they have a restaurant there too. Unfortunately the turnout was not the best due to some unforeseen circumstances but we all had a great time as we always do, especially back at the hotel for the group B&BS sessions! As usual I took some photo's which will be posted on the Corvair Racer Facebook page.

Corvair Racer Update is published by the Performance Corvair Group (PCG). We accept articles of interest to Corvair owners who are interested in extracting high performance from their classic Corvair cars and trucks. Classified advertising is available free of charge to all persons. Commercial advertising is also available on a fee basis. For details, email our club President. Email address shown in the Officers section on the back page of this newsletter.

PCG is one of the many regional chapters of the Corvair Society of America (CORSA), a non-profit organization that was incorporated to satisfy the common needs of individuals interested in the preservation, restoration, and operation of the Chevrolet Corvair. Membership is free of charge. To join, please use the handy form on our website: www.corvair.org/chapters/pcg.

As usual I managed to sell a few items but I bought way more than any profit I might have had. Nothing new there but it's just another good reason to attend the Workshop.

We were a bit concerned about the weather forecast but at least for me it wasn't bad. I ran out of the rain on Friday just before Lexington. The clouds cleared away and it was a bright sunny day but with cold temps and windy. Saturday was overcast and cold but no precipitation. Sunday dawned clear with sun and bright blue skies for my return trip.

An article from Speed News (Ed. Not all of this pertains to our cars but still good info.)

24 SINS OF CHASSIS TUNING – Make the most of your track time by getting the most from your setup, by: Don Alexander - April 1, 2015

1. NOT CREATING A SOLID BASELINE

One key to being fast and competitive is repeatability. You just cannot repeat results if you do not know where you began. A good chassis baseline is the one recommended by your car builder or based on experience at the race track with your car. If you have the experience, create your own baseline. And best of all, if you have records from earlier races at the track you are going to; it gives you a head start. You should have the following: frame heights, crossweight percentage, rear and left side weight percentages, all four tire circumferences, tire pressure and wear, tire compound if not a spec class, fuel load, gear ratio, spring rates, bar neutralized, shock valving, toe, rear alignment, pinion angle, panhard bar height or Watt's linkage settings and any other setting affecting the handling.

To create a solid baseline setup, you need to know lots of details, including frame height, crossweight percentage, rear and left side weight percentages, tire compound and spring rates. Even tire circumference is something you need to know.

2. PREPARING THE CAR AT THE TRACK

This happens too often. You run out of time or have inadequate help before a test or race, so you end up preparing the car at the track, or at least finishing the job there. It is very difficult to create a good setup at the track. It is easier and much more effective in the garage or at the shop. Track time is expensive for a test day. Wasting that time is not effective. And if you're prepping your car at a race, forget any chance of a good result.

Resetting toe at the track after contact or an off is one thing, but your car should arrive setup to tackle the track you are racing that weekend.

3. NOT TAKING TIRE TEMPERATURES

Tire temperatures are your link to what goes on between the tire contact patch and the track surface. I find it difficult to make sound tuning decisions without tire temps. Tire temperatures should be taken religiously every time the car comes in after a run on the track, even after a race. Tire temperatures are your link to what goes on between the tire contact patch and the track surface. Tire temperatures should be taken religiously every time the car comes in after a run on the track, even after a race.

4. NOT TAKING SEGMENT TIMES

Time around the track is gained in small increments. Chassis adjustments can make a car faster — or slower — around the track, but may cost time in certain areas of the racetrack. This data can add to the available data for you to make sound tuning choices. The only way to accomplish this is to record times in several segments of the racetrack. You don't need to take times in every segment on every lap, but taking segments at various points for each session will prove valuable, especially in testing.

5. USING TOO MUCH CROSSWEIGHT

Crossweight, the measure of right front and left rear combined weight vs. total car weight (both with driver) is a useful tuning tool. In road racing or autocrossing situations, excessive crossweight will help handling in one direction but hurt in the other — and it hurts more one way than it helps the other way. Crossweight should be set at 50 percent and never less than 49.5 percent or more than 50.5 percent.

6. NOT KEEPING RECORDS

This may be the most costly sin of all. There is just too much data to keep track of without writing everything down in an organized way. Even if you get a good setup, without records you will be unable to repeat the setup without going through the complete process all over again. The most important time to log records is back in the shop after a race. If you have a good race setup, this will tell you how to get back to the setup the next time you race at that track under similar circumstances. And if the results were not so good, at least you know you need to do something different. There is just too much data to keep track of without writing everything down in an organized way. Even if you get a good setup, without records you will be unable to repeat the setup without going through the complete process all over again.

7. LISTENING TO TOO MUCH ADVICE

Everyone is a setup expert, or so most people would have you believe. It is imperative to achieve success that you learn enough to make your own tuning decisions within your own team. Listening to advice from others is one thing, putting it to use is another. Even if the person offering advice is very knowledgeable, that person likely does not know your situation, preferences, resources or needs. It is difficult to give advice that is useful, and most often, the person offering advice is less knowledgeable than you are, and usually only knows a couple of things that could cure your perceived problem. In my experience, working with techs from companies supplying parts, shocks or tires is helpful. But there are pitfalls to this. The tire guy always wants to cure a problem with the tires, the shock guy with shocks. While they may be correct, often it is something other than what the representative is comfortable working with.

8. NOT CREATING A GAME PLAN

Any plan is better than no plan at all. Take the time to create a game plan for each race, beginning with your realistic objectives, maintenance schedules, testing and race strategy. And remember that part of a good game plan is the flexibility to alter the plan as needed. Usually, no plan equals no result.

9. NOT DETERMINING EXACTLY WHERE THE PROBLEM BEGINS

A handling problem can occur anywhere on the track. Is it corner entry, mid-turn or corner exit? Does it happen everywhere? If a problem occurs in one place, does it result in a different problem someplace else? The classic example

of this is corner entry understeer that a driver overcompensates for at the exit of the corner, creating an oversteer condition. The driver says the car is oversteering, but the real problem is the corner entry push. Adjusting for oversteer will make the problem worse.

10. HAVING A SUSPENSION BIND

Suspension binds create an inconsistent handling situation. If a bind is present, it is just about impossible to tune the suspension. If the car does not respond the way you think it should to changes, check for bind in the suspension. And checking for binds should be part of your routine setup process.

11. HAVING A DEAD SHOCK

A bad shock can be very difficult to feel. Check the shocks if you cannot get the chassis tuned effectively. Feel for dead spot or lack of resistance in both rebound and compression.

12. TOO AGGRESSIVE SETUP FOR DRIVER EXPERIENCE

Often, the fastest setup for a given car is too aggressive for a driver without some experience. When the suspension is too stiff, especially the shock valving, it is difficult for the driver to feel what the chassis is doing. The car reacts too quickly for the driver to sense what is occurring. Softer springs and shocks, while slower for the experienced driver, may be faster for the inexperienced driver.

Knowing what the spring is doing at the tire-track interface is important, but determining the correct spring rate for the bumpiness of the track surface requires knowledge of the suspension frequencies. If you do not know how to calculate suspension frequencies, then find someone who does. And if your suspension manufacturer doesn't know either, you may want to find another one.

13. MAKING CORNER WEIGHT ADJUSTMENTS AT ONE CORNER ONLY

To adjust corner weight percentage, you must change frame height. Suspension geometry is designed to work best at a certain frame height. Changing the frame height can alter the suspension geometry in a negative manner. Making one big change at one corner can cause this to happen. The trick is make small changes at all four corners, or at least three corners. Instead

of putting a turn in the right front, put a quarter turn in the right front and left rear, and take a quarter turn out of the left front and right rear.

14. TRYING TO CURE HANDLING PROBLEMS WITH ONLY ONE ELEMENT

Any handling problem can be changed by adjusting several different parts on a car. It is ineffective to use only one or two items to affect the handling. Often, engineers, shock, tire, spring, etc., will try to cure a problem by using what they know best. This is often not the most effective way to problem solve. It is important to look at the entire system as a whole, then make changes that suit the system best and offer the most favorable compromise.

15. MAKING MORE THAN ONE CHANGE AT A TIME

It is always best to make only one change at a time. Making more than one change can prove difficult to analyze. Which change helped? Did one change actually hurt?

16. MOVING TOO FAR AWAY FROM RECOMMENDED FRAME HEIGHTS

This can cause binding in the suspension or at minimum cause undesirable suspension geometry.

17. INACCURACY IN MEASUREMENTS

As bad as not keeping records is in the first place, recording inaccurate measurements is as bad or worse. This can lead to all kinds of problems.

18. INCONSISTENT FUEL LOAD

Changing fuel load will always be a setup and tuning problem. As fuel is burned off, handling will change. If you do not tune at a constant fuel load, your data will be inaccurate and the results misleading. No more than a two gallon fluctuation is acceptable. One gallon is a better mark.

19. CREW/DRIVER COMMUNICATIONS

If the crew and/or driver is not sure of the concepts of tuning and clear about the language, all sorts of problems can occur. Everyone on the team needs to be on the same page. An example of this occurred on an Indy car team. The

driver, who was not a native English speaker kept complaining about the car pushing. The crew chief kept making changes to the car, but the problem only got worse. Finally, in a fit of frustration, the driver yelled at the crew chief that the car is pushing at the rear. Luckily, the driver didn't "push" the rear of the car into the Brickyard fence.

20. DRIVER OVERDRIVNG

If a driver is over-driving the track or setup, most of the data, whether from the driver or tire temperatures will be less than accurate. Over-driving not only abuses the tires but also masks real handling problems.

21. MAKING CHANGES THAT ARE TOO BIG

If a change is too big, you can cause a handling problem that is worse than the one you already have. On the other hand, a change too small can be difficult to detect by the driver or on the stop watch. Big changes would be more than two numbers on shock valving, more than 15 percent in spring or bar rate, more than 2 percent crossweight, more than a quarter inch in ride height.

22. NOT UNDERSTANDING THE WHOLE SYSTEM

Understanding the whole system is very important. The key is to understand how any change affects the tire contact patch load and traction. Always thinking in terms of tire contact patch load and traction will help you focus on making the best change possible for the situation. A basic understanding of race car dynamics is very important. Understanding how the whole system works together is key to being able to make corrections to your setup. It is always best to make only one change at a time.

23. CHASING CHANGING TRACK CONDITIONS

Track conditions constantly change. The car may get faster during the day even though the lap times are slower. The track may be slowing even faster than the car is getting faster. If in doubt, return to the starting setup to see how the track has changed.

24. CHASING OLD TIRES

At some point, tires get too hard to be fast. There is a point that no matter what you do; the car will not get faster. Chasing an old set of tires is ineffective.

PCG Club Officers:

President: Tracy Leveque Email: libgan2004@yahoo.com
Vice Pres: Ned Madsen Email: aeroned@aol.com
Webmaster: Allan Lacki Email: redbat01@verizon.net
Newsletter Author: Rick Norris Email: ricknorris@suddenlink.net
Newsletter Layout: Allan Lacki Email: redbat01@verizon.net