

SO YOU WANT TO DRIVE AT LIME ROCK?

FOREWORD



Terry Stafford and His Lime Rock Articles Way back in 1992, Terry Stafford of the Long Island Corvair Association wrote a series of six articles about preparing Corvairs for the Northeast Corvair Council (NECC) time trials at Lime Rock.

Although Corvair Days at Lime Rock are just a memory, Terry's articles are still relevant today because they provide good advice for putting Corvairs in tip-top mechanical condition. And NECC is still in business doing high performance driving events at other tracks. Perhaps you'd like to drive with NECC this year at, say, New York Safety Track, New Jersey Motorsports Park, or Summit Point? And so we are reprinting Terry's articles right here, for the very first time.

This series of articles is not just for track guys. Are you bringing an old Corvair out of a deep slumber? Are you hoping to drive your Corvair to the CORSA Convention in Tennessee this year? Terry's articles can help you prioritize the things you need to do to get your Corvair ready for the long haul. And they're entertaining, too.

By the way, Terry continues to enter his 1964 Fitch Sprint Spyder in various autocross and NECC events. Shown above is a photo of him taking another driver out on the course at Summit Point Race Track.

SO YOU WANT TO DRIVE AT LIME ROCK?

PART 1 OF A 6 PART SERIES, by Terry Stafford

I've never written a series of articles like this before so first I'll lay out a plan for preparing for Lime Rock. But before we can start I have to ask you to pick a car. Yes, you have to bring your own car or plan now to borrow one. By choosing the car now you can put all your effort in one direction and get further along. And if you "tell the car" about Lime Rock, that car will want to be taken on the track and will bring you to the race track come ____ or high water! (That thought is not widely believed but I know it to be true.) My only caution to you is that I was "normal" before I ever drove at Lime Rock.

\$100 per Month Plan. Now for the plan: Let's call it the \$100 per month plan. (Or \$50, or \$25, or \$10.) And start spending it in February at the NJACE Parts Auction.¹ That's right, bring Lime Rock money. It's easier to spend because it's not yours, it's Lime Rock's. And bring a list of things you could use. (Also, if you have spare Corvair parts you won't need, bring them to the auction so you can sell them and raise even more Lime Rock money.)

Why February? Now you may have wanted to ask, "why have Lime Rock on your mind in February?" Well, if you go to the NJACE Parts Auction, you will not find Corvair parts this cheap again, and besides, it's nice to have twenty to thirty knowledgeable consultants with you when you bid for them.

Make a List. Here are some ideas for your list: First is safety and mechanical needs, i.e., safety belts, mirrors, vented gas cap (per original), new brake pedal cover, shocks, etc. Second would be parts for any repair you intend to make before the event, i.e., new plug wires, carb rebuild and tune-up kits, front end parts, etc. Third and only third are upgrades to improve performance, i.e., hi performance tires, engine upgrades, quick steering arms, etc. Fourth is things to make you look better (for the crowd around the winner's circle), i.e. new emblems, seat covers, quarter panel trim, white scarf, nice sunglasses, CORSA T-shirt, etc.

A Word About Safety Belts. Stock lap belts may be good enough for autocross and drag racing, but you'll need a shoulder harness to drive on a road course like Lime Rock. All road courses now require a minimum of a shoulder belt with your lap belt, called a "3 point belt", because there are 3 points where it is bolted to the car. You will need to modify a stock Corvair to install a 3 point belt, but it will provide additional safety for street use too.

Alternatively, you can install a high back racing seat just for the day. If the seat back is higher than your shoulders, you can buy a "4 point racing harness" that can be bolted to the stock front and rear seat belt "anchors", i.e. the threaded holes where the belts bolt in. And this kind of racing seat with 4 point belt keeps you straight up and right where you want to be in all cornering and braking circumstances.²

¹ NJACE Indoor Parts Auction. Every February, the New Jersey Association of Corvair Enthusiasts (NJACE) conducts an auction where parts for Corvairs are bought and sold. You can read all about it on the NJACE website at <http://www.corvair.org/chapters/njace/>

² Thanks to NASCAR's big push to improve driver safety in the past few years, the trickle-down effect has produced greatly improved seat and belt designs that are affordable for the Saturday night racer. Five, six and even seven-point harnesses are now available.

If your car never had rear belts, you will have to install anchors for them under the rear seat. They will never show once the racing seat is removed and regular belts reinstalled.

The specific technical requirements for safety belts vary by racing organization. NECC's requirements are more fully described at www.neccmotorsports.com.

More to Come. Next month, we will start going over the car. This series will cover car inspection and safety items, touch on classification regulations (what you can change and what it will mean), performance upgrades, registration information, what will be expected of you at the track, what you should expect on the track, and anything else you ask me to cover.

Now, for your homework assignment: Clean anything you can on or off the car, and watch the Daytona 500!

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PART 2 OF A 6 PART SERIES, by Terry Stafford

Driving on a Road Course Race Track. What's it like to drive on the Lime Rock track? Well you know your favorite exit ramp close to your house, the one that you know how to take very fast? When it's late and you're in a hurry and no one is on the road, you know just when and how much to turn the wheel and just when to tap the brakes, and it feels great to go thru that turn perfectly.

At the race track, we will take away the traffic light or stop sign at the end of the exit ramp. So you re-accelerate smoothly onto the next straight and string 10 to 15 of those turns together. That's an even greater feeling. Now it's going to take some time, and maybe a few trips to any track, to learn every turn on that track like you know your favorite exit ramp. But that challenge is what makes it so much fun.

Begin to Invest! Remember our \$100-per-month plan? This month's "plan" dollars are going to be spent differently by everyone. Convertible owners, you are going to have to put some toward a roll bar, which is mandatory for Lime Rock (and all other road courses. Ed.) It will conform to SCCA regulations, extend 2" higher than the driver's helmet, have padding, and, get this, it will be completely removable if you want it to be. Read details on www.neccmotorsports.com

Everyone, however, should buy a new Otto fan belt or Clark's Ultimate fan belt or equivalent. (I don't know of an equivalent.) Buy it now and install it now. The good used belt you remove will make a perfect spare. The Otto and Clark's belts are narrower and ride deeper in the pulleys and don't ride up at high speeds. By putting it on now, it will break in (and stretch a little) and hold the final adjustment better this summer. Contrary to what you may have heard, Corvairs can be tough on belts....

Hard-Harder Test. This weekend, go out to your Corvair and do the Lime Rock brake test, a.k.a. the "hard-harder" brake test. This test will be performed during tech inspection at the track, but you want to do it now too. Sit behind the wheel and step on the brake pedal very hard. Hold it and pull the steering wheel toward you and push even harder on the brakes, as hard as you can. If the pedal suddenly goes soft under your foot, then you need to do some brake line repair. Just look under the car for the puddle. Better now than at trackside. (But do not do this test in your driveway/garage if you can't lift the car and change the steel brake line over the top of the gas tank. Instead, take the car to your mechanic and do the test there this month.)

Walk-Around Inspection. Now let's look further ahead with a brief inspection. Tires on the right side of the car must be the same size as the tires on the left side of the car. They must have legal tread depth (on all sides), there must be no missing studs on any wheel. The battery hold-down must be secure. The throttle return spring must not be ready to break. Un-hook both ends and look for a worn groove where it has engaged over and over. The engine mounts must not be sagging so the engine should sit level. And the brake lights must work. Test the shock absorbers by putting both hands on a front fender, above the headlights. Push down with all your weight, and then release quickly. The car should come up and then settle down all in one motion. If it bounces more than once before settling down, shop for shocks. Do the same all around the car. Sometimes you might only need fronts or rears.

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PART 3 OF A 6 PART SERIES, by Terry Stafford

In this article, Terry describes a typical day at an NECC track event. In 2015, Terry was kind enough to update the text for consistency with NECC's current procedures. But even though some of the procedures have been updated, a driver from 1992 would immediately feel at home at a current NECC event.

Your Day at the Track. What is the day like at this Lime Rock event anyway? Well, it's always sunny and about 80 degrees... Oh, you mean what will you be doing? Here is an activity list, just for you: Tech inspection, Drivers meeting, Practice driving sessions on the track, Lunch break, More practice driving, and finally, Timed laps. Now, I'll walk you through the day.

Tech Inspection. When you arrive (early), you'll take your day's parking space in the paddock. (The rush of feelings will start here). Pay your registration fee if you haven't already done so. Then empty everything out of the trunk, interior, and engine compartment of your car, including the spare, floor mats, and wheel covers, and get in the tech inspection line. Bring your helmet and long sleeve shirt. (Don't forget the car!) Look around a little and chat discretely with some of the other drivers in line with you.

Tire Inflation. Listen for Announcements. After your car is inspected, inflate your tires as you come back to your parking spot. (We'll discuss this again later, but +10 psi works.) Listen carefully for announcements over the track's public address system. The drivers meeting comes next. You don't want to miss it!

Drivers Meeting. At the drivers meeting, you will hear the rules and procedures of the day. Novices can benefit a lot if they ask for an instructor to ride along. It can make the basics come easier, and helps in finding "the line", and brake and turn-in points. You will also be assigned a run group, (A,B,C) at the drivers meeting. NECC will set up at least 3 run groups of similar run potentials, based on the car and the drivers experience. Each run group will get about 20 minutes of track time to learn the track lay-out and get a feel for how the car is handling.

Run Group Practice Session. When your run group is called over the loudspeaker, get into your car, drive to the track's pit lane and put on your helmet. The fun is about to begin!

As you wait in line for your run group to be sent out, you can lean out the window to talk to Paul Newman and Mario Andretti (who come to every one of our events). Your run group of about 15 cars will be let out onto the track with considerable spacing. At least the first 2 laps will be run with the yellow caution flag out at all corner stations. It means "Not Full Speed" and "No Passing" and is the time to locate all of the corner stations around the track. When the green flag comes out, you are on your own. (This is the Big One, Edith).

Open Track Sessions. Once all run groups have had their "get acquainted" laps, we switch from run groups to open track time. By now, you have lost all control and will be wandering around and grinning at everyone.

Open track time isn't restricted to any particular run group. Any and all drivers can get on the track during an open track session. Don't be flummoxed. The slower cars have the right of way, and passing zones are limited to one or two straight sections around the track. All of this is covered during the drivers meeting. And there will be plenty of time, especially in the early afternoon, when only a half dozen or so cars will be on the track.

When the first open track session is announced, get in line again. You'll be let out on the track as space becomes available. Cars come back into the paddock at will to catch a breath, (you have to breath,) adjust tire pressure, let everything (including yourself) cool down, add some fuel, pick up an instructor, etc. And get back in line to go back out when you are ready.

Each track usually calls for a mandatory shut down for a lunch break for the workers. The afternoon will start with more open lapping sessions and then finish with timed runs. For the timed runs, you'll wait your turn in the pit, (interesting feelings rushing by), and have a chance to get last minute advice from Mario and Paul.

Your Solo Laps. Timing. Finally when given the signal you'll charge out of the pit lane, (very interesting feeling here), for a solo run of four laps. (One warm-up lap, two timed laps, a checkered flag and one cool-down lap). Your best time will compete for trophies in your class, but who cares you're hooked by now!

Car Prep Continued. So that will be your day at the track. Now back to your car. You did your brake line test last month, right? Well do it now and let's rebuild the brakes this month. Replace the brake fluid at this time, (once a year, they say), and dust each drum, (wear a mask), and adjust. Inspect each wheel as follows. Shoes: not too thin or cracked. Drums: if scored or heat discolored, have them cut (turned.) With help, check the action of each unit one at a time (with all other brake drums in place.) You must attain full release, (shoes back to the post,) when your helper releases the brake pedal. Three causes if you don't attain full release: wheel cycling needs honing, emergency brake cable needs lubricating, or heat-fatigued springs. Check brake springs by dropping them on the garage floor, (not in the grass under the tree in the back.) A good brake spring will give a dull thud, not a high-pitched spring or ringing sound).

Homework. Window shop for a Snell helmet. (Snell upgrades its helmet specifications every few years. Log onto the NECC website at www.neccmotorsports.com to determine what kind of helmet is currently required. Loaner helmets may be available at the track, but don't count on it. Ed.) Watch the Long Beach Grand Prix.

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PART 4 OF A 6 PART SERIES, by Terry Stafford

Registering for NECC Events. It's time to register. Go to www.neccmotorsports.com and find NECC's online registration web page. To fill it out completely, you will need to assign your Corvair to a particular "class". This helps the track officials determine your run group and stage the cars in the pit lane when you go out for timed laps. And after the event is over, NECC lists the lap times according to class so you can see how you did against cars of similar potential.

Classifying Your Corvair. The proper class for your car depends on the modifications you have made to your Corvair, ranging from mild (i.e. street stock) to wild (i.e. full competition). In general: NECC's Street Stock (SS) class allows limited changes before getting bumped into (IS) Improved Stock. IS allows additional changes until you are moved into Street Modified (SM). And if your Corvair is a purpose-built track car, it should enter it into the Competition class (COMP.)

Some improvements are free and others bump you immediately into a higher class. If the only change you want to make will bump you up, then you probably won't be competitive in that higher class. But refer to what I said last month, "who cares, you're hooked".

Confused? Don't worry. NECC's registration web page has a link to a list of classification regulations that provide a full description of how this works. As noted in the classification regulations, Early and Late model Corvairs are classified separately until you get up to Street Mod. For vehicles other than Corvairs, you will not need to select a class, but you should still list your car's modifications on the NECC registration page.

Some more notes about classification: NECC's classification rules are similar to CORSA autocross rules with the addition of an early high performance class in Improved Stock. If you don't know what I'm talking about, that's O.K. You will find the classification rules on the website. If all else fails, NECC will classify your car for you when you go through tech inspection at the track.

One thing not to forget, Lime Rock and most tracks we run on require street legal mufflers. Any car shows associated with NECC are not strict CORSA concourse rules but more casual.

Tips for Performance. Here is my list of the things affecting a fast time on the track: 1. driver, 2. tires, 3. suspension condition and settings, 4. shocks, 5. brakes, 6. engine performance, 7. engine power, 8. Misc., such as air dams, cooling, differential, etc. When I separate #6 and #7, I mean it's better to have a good running stock engine than an unperfected hopped-up engine. Let's run down the list.

Driver: You won't perfect this in several visits to Lime Rock (or any track), but that's all the fun.

Tires: Radials are much preferred, lower profile is better (70 series is the lowest allowed in all stock classes); stock size rims are fine 'til you get very modified; 1/2 worn tread is best; I like 195/70's for stock and run 205-60's on original 13" X 5 1/2" rims, in Improved Stock.

Brakes: Refer to last month (I use metallics although many people don't like them).

Suspension: All steering and suspension joints must be up to spec tolerances or you won't get on the track.

Alignment Settings: (These settings are from the book, 'How to Hotrod Your Corvair':) Rear: 2 to 3 degrees negative camber and 1/8 toe out. Front: caster 3 deg. Camber: 1 deg negative. and Toe In: 3/8 deg. Up-dates and back-dates are allowed thru the years to get the thickest front sway bar that was offered. Aftermarket rear sway bar sounds like a good idea.

Shocks: Good condition a must, heavy duty preferred. I like gas shocks (for an Early that fit the front on a 57 Chevy).

Engine Performance: Carbs rebuilt, fresh tune up, new ignition wires, and turn the key. (Single biggest thing you can do for performance on the day of the event is NEW points, plugs, cap, rotor, condenser, and correct timing. ALWAYS HAVE A SPARE NEW CONDENSER , and try it to solve ANY un-diagnosable engine performance problem. Then call me and say, thank you.)

Engine Power: Dual exhaust helps, bigger carbs or re-jetting is noticeable, water injection to run hotter ignition set up makes a difference. That's about it for bolt-ons.

Misc.: Do anything for cooler engine temps, like added oil cooler or finned oil pan, etc. Front air dam is a big help for steering stability at high speed. If you're thinking of air ducts for brake cooling, battery relocation and other weight transfer, new camshafts or 3.08 gears, you don't need me.

Homework. Remove the top engine cover and lower heater shrouds and run a key hole saw in all the cooling slots in the heads and barrels (what a temperature difference.) Enter an autocross, and watch the "Indy 500". (You better know when that is.)

SO YOU WANT TO DRIVE AT LIME ROCK?

PART 5 OF A 6 PART SERIES, by Terry Stafford

Adjusting that Fan Belt. Warm weather is here, so let's review (and really do the stuff this time). Put on your new fan belt. Oh-you already did? So here is the belt adjustment procedure. Snug both bolts on the idler pulley (fan belt pulley) so the pulley can be moved with some force. Then pry the pulley (with wood if possible against the top shroud) to tighten the belt. While holding pressure on the pry bar, use your other hand to spin the generator or alternator pulley. When the belt is tight enough to allow the pulley to slip in one direction but not the other, quickly tighten one of the idler pulley bolts, (then the other one.) This technique prevents over tightening, which causes the belt to ride up the pulleys and jump during a sudden load change. Now adjust the belt guides (post '63 models) so that the belt just touches them when you rev the engine quickly.

I wear my belts out from the top side, but never throw or flip them. If a belt flips upside down during operation, (I think because it was too loose,) it is ruined because the internal cords have been broken when it was stretched enough to flip. This is very easy to do when you throw a new belt on at the track and go out and run. The belt will stretch a little then get a little loose.

If you have to put on a new belt at the track, re-tighten it every time you come into the pits. (That's why we are going to be way ahead of this by having a good used, broken in, belt because we changed it a few months ago.)

Steel Brake Lines. Rubber Brake Hoses. Here's some miscellany: Do the Lime Rock (hard-harder) brake test again. Step on the brake as hard as you can, then grab the steering wheel and press harder. (See Article #2 and note to do this in your mechanic's shop if you will not be doing the necessary repairs yourself.) This is actually testing the steel lines. You should replace the rubber wheel cylinder brake hoses as they show cracking or other wear.

Throttle Return Spring. Take off the throttle return spring and examine it for thin spots at each end where it attaches. See, you didn't notice that before! Now get a new one.

Battery Hold-Down. When the tech people grab your battery at the track and shake it violently from side to side. Is it going to work loose or start to break through the rusty battery compartment floor? Well I don't know either, so go outside now and check it out.

Front Suspension Checkup. I know you are going to service your brakes, so let's move on to talk about the front end. It's the most frequent reason for not passing tech. This includes wheel bearings, ball joints, tie rod ends, idler arm and pitman arm bushings, the center link bushing and steering box play.

Did I mention that front end problems are the most common cause of tech failure? Grab the top of the front wheel and rock it in and out real hard. If you feel and hear movement, it is probably a loose wheel bearing (remove the dust cover and cotter pin in the center of the brake drum and snug the large crown nut), or the upper ball joint. If you can feel an upper ball joint movement with the tire rocking I just described, you need to replace that ball joint. Always try the wheel bearing first, but don't adjust it

too tight. You don't want to feel any mild grinding or chunking as you slowly spin the wheel all the way around.

Next, gently rock the steering from side to side as far as you can in both directions without moving the front wheels. This free play" should allow the steering wheel to move only about one to two inches before the wheels start to move. If more movement than 2" then adjust like this. Remove the plastic plug from the floor of the trunk, (in line with the steering column over the steering box). You'll see the top of the steering box. Loosen the lock nut and turn the slotted rod toward the right to reduce the steering wheel movement until you get the adjustment you need. Hold the rod in that position while you tighten the lock nut. Do not over tighten. Once again you have to turn the steering wheel with no binding or chunking.

Now, jack up the driver's front tire under the lower A-frame. Get it high enough so you can get under there and use two jack stands for safety. Have your assistant (yes, your assistant) turn the steering wheel sloooowly from side to side just enough to move the wheels a little in both directions. You get under the front and look at each connection that moves when you change directions. You don't want to see one part move then the joint or bushing at the end flex before the next part or rod moves. All these parts and both wheels should change direction at the same time. You have just checked the pitman arm bushing, drag link bushings, and tie rod ends. Replace parts as needed, and a new wheel alignment will likely be needed.

Lower ball joints next month. Remember, I'm no mechanic and you might know less than me, so don't be afraid to get real help.

Homework. How about that Indy finish? At my first trip to Lime Rock, I was beaten by 14 hundredths of a second in my class. Try to run a local autocross and pick up that little something I didn't have that first time I ran.

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PART 6 OF A 6 PART SERIES, by Terry Stafford

Those Lower Ball Joints. Last month, I ended the front end discussion without covering the lower ball joints. To inspect these, jack up one front lower control arm to lift one tire 2 to 3 inches. Now have your assistant put a pry bar or long jack handle under the tire and lift it up while you examine the lower ball joint for movement in its socket. It is said that less than 1/8 - 1/4 inch of play is acceptable. Check this opinion with your resident mechanic. (Definitely more than 1/4" play requires a new ball joint.)

Oil Cooler Cleanup. Now some more miscellany. Inspect and clean the stock oil cooler. This is a serious overheating source. You may have already done this while the top engine cover was off if you did the de-flashing. If not, then here is the procedure. Remove the inspection plate under the generator or alternator and clean out any debris. Vacuum then blow compressed air through the cooler passages. And, on all but the earliest styles, run wire diagonally through the passages. Consider fabricating end plates to force the engine cooling air straight through the cooler and out the bottom.

Clutch Cable. Early model clutch cables (and late model clutch cables up to 1968) fail most commonly at the ball on the pedal end of the cable because it is without grease. If it can't swivel freely, it bends the cable with every clutch depression until the cable breaks right at the ball. Check it out from inside the car under the dash. Find the cable at the top end of the clutch pedal arm, and put a lot of wheel bearing type grease on the ball.

Shock Absorbers. It's time to make a final decision about shocks. Inspect them for signs of fluid leaks and do the push-down-and-release test on each fender. Be critical. Good shocks really help the handling on the track and on the road.

Lights, Mirrors, Horns. Brake lights and turn signals must be in proper working order, and I consider the horn to be essential for Lime Rock. You need a horn to say hello to all the other Corvairs roaming the Berkshires all weekend long. And you are supposed to use the rear view mirrors on the track, so you don't want them loose or falling down. Tighten that sun visor that falls down, too. (It will fall down and block your view just when you are looking for the apex of that high speed turn #7.)

Empty that Glove Box! And I'll bet you never thought about the glove box door. Well, at the 1991 Convention autocross, we were allowed to take passengers on our fun runs at the end of the day. One passenger, who will remain anonymous here, didn't close my glove box door completely. When we came out of the chute, it popped open and started to unload. I laughed as I glanced at him trying to catch things and push them back in. When I hit second gear, he was pushed back in his seat and objects began to fly straight out and hit him in the belly. Things like flashlights, screwdrivers, tire gauges, and a spare shifter knob were free and proud of it. This was very funny to me until the first right-hand gate when all these things began hitting me in the legs and lodging under the gas and brake pedals. Now I understand why loose objects are forbidden.

Homework. Practice driving at 100 mph while looking in both rear view mirrors... (ONLY KIDDING!) Look for me at the track, and please say hello. I have the #66 black Early coupe and love to talk about your Corvair or mine.