

Steve Smith's Advanced Setup Guide

Part One

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See also: Steve Smith's [Secrets of Online Setups](#), [60/60/1 Setups](#) and [F2 Superguide](#)

Steve Smith has written an extensive addendum to his book, *Four Wheel Drift: A Car Guy's Guide to Grand Prix Legends*. In order for the book to be included in the box with GPL, it went to press prior to the completion of GPL's development process. As a result, there are many details which Steve was unable to incorporate in the book.

Through the miracle of the World Wide Web, we had the first part of Steve's addendum in your hands within a matter of days of the appearance of GPL on retail shelves.

Here's the Advanced Setup Guide.

Overview

This is a section (don't call it a forum!) devoted to setup advice. I'm the guy who wrote the strategy guide ("Four-Wheel Drift") that ships with the game. But GPL was a whole different ballgame when I turned in the manuscript three months ago. Alison has generously given me this space to discuss anything I may have inadvertently left out of the book, what has changed since the book was written, what we've learned since, and--occasionally--to correct any, ah, misunderstandings.

Particularly about setups.

Thus, I welcome the opportunity to "rewrite" the book online, and to grow the database of what we know about GPL's setups for all to see, and--hopefully--to profit by. But I don't want this to be just another laundry list of blind setups, grabbed off the page, and madly driven just once before joining hundreds of other discards in the Recycle Bin of history.

So, let's talk about it. I'll start off with the book's most glaring omission--why no Ferrari--explain it, and move on to other topics, like trail-braking, which I said in the book was ill-advised, but which, after being hammered unmercifully by my peers, deserves a second look. Or "Low-Rider" setups: to drool for in July; nixed at the last moment, it is rumored, by David Kaemmer, who thought the setups looked ridiculously unrealistic. They did; you could always spot the ringer among the AI cars--it was the one with the pavement-scraping ride-height and acutely angled halfshafts.

Anyway, here are some of the topics I'll throw open to discussion:

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If you want to join in the melee, [email](#) me. I welcome your response on any of these issues, but

reserve the right to edit them for grace, brevity, eloquence, or sanity.

--[Steve Smith](#)

Sidebars

- [Monza: Our Own Private Skid Pad](#)

Ferrari

The Mystery of the Missing Marque

What happened to Ferrari? The marque is in the game, but each and every reference to Ferrari was excised from the book like Col. Kurtz' inoculated arms in "Apocalypse Now." Gonzo. What happened? Beats me. Probably Papy's bete noir, licensing "issues." I doubt that it was because of anything embarrassing I might have said about Ferrari in the manuscript. Far from it; I bent over backwards to praise the 312 as the best car, overall, in the game.

The 312 is relatively easy to drive; although not the easiest--that distinction belongs to the BRM. It's reasonably quick; although not as fast as the fleet Lotus (it's about on a par with the Eagle at most tracks, and faster than the others almost everywhere). It's quite versatile; equally at home on tortuous tracks like Monaco and on more open circuits like Zandvoort. It has a well-rounded power curve; not much on the high-end (its weakest suit, oddly enough), nor an abundance of low-end grunt, but a nice fat mid-range. It's agile; although not as nimble as the Brabham, but more so than the lanky Eagle. It's simple to set up; neither as finicky as the Lotus nor as vague (unresponsive) as the BRM. And over the long haul, particularly in full-length GPs, its reliability should stand it in good stead if you're going to make a run at the World Drivers Championship.

In short, the Ferrari is the best-balanced car of the lot; a car you can start with, learn with, and stick with. If you can't get a handle on the tricky-to-drive Lotus, I'd recommend the 312 as your next best bet.

Here are two setups I've developed for the Ferrari at Monza (which will be our test track for basic setups for all cars--I'll explain why in a sidebar).

Mon_Fer_Q (qualifying; 4 gallons/6 laps)

- LF: 21 psi/65 lbs/2&3 shox/-1.25 deg. camb./1.0-in bumpers/174/174/174 deg.
- RF: 21/75/4&2/-1.0/1.0/168/166/164
- RR: 20/80/5&3/- .50/1.0/202/200/198
- LR: 20/75/5&4/- .75/1.0/204/204/204

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left and IMO on the right, just as they are shown in the box on the setup pages.)

- Toe: 0.0/.175 in., F&R
- Bars: 100/60 lbs., F&R
- SRH: 2.0/2.25 in., F&R

Editor's Note

I differ slightly with Steve's rating of the Ferrari's competitiveness relative to the other cars. I feel that the Ferrari is superior to the Eagle almost everywhere except Monza and Spa, where its lack of top end power can't be offset by its excellent handling.

I believe the Ferrari is probably the equal of the Lotus at several tracks, including Mosport and Zandvoort, where it clearly outclasses the Eagle. It's a superb racing weapon for more difficult tracks like Mexico, Rouen, and the Ring.

The Ferrari is the best car at Monaco, but sadly it's uncompetitive at Monza.

All in all, the Ferrari is a sweet car to drive, probably the most delightful of all the cars in the game. When the track gets nasty, the Ferrari rocks!

- Alison

- BB: 56% F
- G1: 14/46 (10.19)
- G2: 15/31 (6.41)
- G3: 17/31 (5.65)
- G4: 19/28 (4.57)
- G5: 25/31 (3.84)
- R&P: 10/31
- Ramps: 85/45
- Clutches: 3

Data points (see sidebar):

- S/F line: 165 mph
- Vmax, front straight: 190
- Vmin, Curva Grande: 135
- Vmax, between the C.G. and the 1st Lesmo: 170
- Vmin, 1st Lesmo: 80
- Vmax, between the Lesmos: 120
- Vmin, 2nd Lesmo: 85
- Vmin, Ascari/Vialone: 175
- Vmax, back straight: 190
- Vmin, Parabolica: 70

For a short-race setup (11 laps), I added 3 gallons of fuel, dropped the RF 1 psi, added 10 lbs. to the bars, moved the brake bias forward 1 percent, reduced the coast-side angle to 30 deg., and lengthened the higher gears.

I'm not representing these setups as the be-all and end-all, but they should provide a good starting point for discussion. Here's how I arrived at the numbers:

First, note that the setups are asymmetrical. Monza is one of two tracks where asymmetrical setups seem to work (the Glen is the other), but asymmetrical setups don't work for all cars...at least, not equally well. (I'll cover this in another sidebar, later.)

There are three ways to make a setup asymmetrical.

1. The geometry. This is generally to be avoided because if you get the front cambers much more than a quarter-degree apart, almost any car will get squirrely under braking.
2. The springs.
3. The shocks.

Since the key to good laps at Monza is being able to take the Ascari turn flat out, and since the tendency is for most cars is to push here, note that by stiffening up the right side (and/or softening the left), you can get good grip on the righthand turns and still sustain a modicum of oversteer to help you around the fast left sweepers (Ascari and the Della Rogia). I added a quarter-degree of negative camber on the right side, and spread the springs apart 10 lbs. at the front (where the temps are farther apart, side to side), but only 5 lbs. apart at the rear (where the temps are closer together).

Monza

Our Own Private Skid Pad

Just as in the book, we're going to work on our setups at Monza...and for the same reasons. Plus one more: now that we have hard numbers to go by, I'll be adding tire temperatures (at the S/F line) and mph figures (at easily located "data points" around the track) to the setups.

The tire temps will be measured after several laps at speed at the Start/Finish line. Assuming you know how to use camber and pressure to "zero" the temperature differences across the tread, you should be seeing about the same figures as me...if you're using the same setups. If your temps are higher, you're probably driving faster than I am and need to add a touch of positive camber (and maybe drop the pressure a scosh). If they're less, add a little negative camber and maybe a little more air. (Discussed in the book.) Note that the leftside temps will always be higher because you just came off a sustained righthand turn (Parabolica), although they should be even across the tread. The rightside temps will be staggered, with the inside higher than the middle by a couple of degrees, and the outside will be another couple of degrees cooler than the middle.

We'll also measure the speed at the S/F line, and at various locations around the track. In general, these are the speeds you should be seeing on a really good lap:

- S/F line: 170 mph
- Vmax, front straight: 190+

The shocks are usually the key to getting the car to "feel" right. I arrived at these values through a lot of cut & try. The only "theory" involved is that the extra bump compliance on the left side allows the chassis to roll into the turn without the sharp spikes (G-loading) that comes from stiff shocks, which is matched by extra rebound compliance on the right side. The opposite shock values (LF rebound & RF jounce) are an attempt to balance the overall shock response and minimize "snaking."

To get the car as low as practicable, I lowered the bump rubbers to their minimum (1 in.), and set the ride height for an inch in the front and an inch and a quarter in back. This is to minimize weight transfer, minimize scraping the tub under braking, and to prevent the suspension from bottoming under acceleration. These values seem to work for every car at Monza.

The bars are a little softer in qualifying for maximum grip; a little harder in racing trim for faster steering response in traffic.

The toe is zero at the front to reduce rolling resistance. You can add a quarter-inch of toe-out for better front end bite without much of a speed penalty (maybe 1 mph), but the front end "hunts" when the car rocks side to side. The rear toe-in is used to fine-tune the balance under full power in the Ascari curve (less toe = more oversteer).

The coast-side ramp angle is 60 deg. for qualifying to soften the transition from throttle on to throttle off entering the Curva Grande, and 45 deg. for the race to enhance the "faux" ABS effect discussed in the book. Likewise, the brake bias is 1% further aft for qualifying for maximum stopping power, and moved forward 1 click for more stability during the race (as well as allowing some trail-braking, which helps protect your line--you don't have to leave the door quite so wide open).

I usually lengthen the gears for the race, both to reduce the amount of available torque (controlling wheelspin for a whole race is a lot more tiring than preventing it for one hot lap) and to keep the engine from overrevving (especially when another car gives you a "tow"). The ratios shown allow you to use either G3 or G4 for the Curva Grande, and either G2 or G3 for the Lesmos, but G4 isn't tall enough here to power through the Ascari curve. The overriding concern is that you be able to get back on the power sooner rather than later in the Lesmos and--especially--the Parabolica (although I find I still have to short-shift, feather the throttle, or both in the final turn).

Comments? I'd like to hear your opinion. [Email](#) me.

--[Steve Smith](#)

Taming the Wild Lotus

The Lotus 49 is a very difficult car. Difficult to drive and difficult to set up. You can be one click away from perfection and it will still handle like a Fairthorpe Electron on a bad suspension day. But if you chance upon the magic numbers, the car will suddenly snap into focus and--if you're good enough--start going like stink.

Unlike the BRM, say, where you can run the numbers up and down to very little effect (MG Mitten once sold a set of rubber tools so you could play with the SU carburetor's settings to your heart's content without messing up the factory defaults), every tiny adjustment to the 49 will result in dramatic changes in the car's behavior. Unfortunately, like genetic mutations, most of them will only make things worse.

- Vmin, Curva Grande: 135
- Vmax, between the C.G. and the 1st Lesmo: 175
- Vmin, 1st Lesmo: 80
- Vmax, between the Lesmos: 120
- Vmin, 2nd Lesmo: 85
- Vmin, Ascari/Vialone: 175
- Vmax, back straight: 190+
- Vmin, Parabolica: 70

It should go without saying that these speeds are approximate...and will differ from car to car as well as from setup to setup. But each setup will be accompanied with real numbers measured at these points, so you can use them to compare to your setups.

I prefer this method to lap times because it has less to do with your driving ability and more to do with your setup. It breaks down a lap into easily reproducible sections for more accurate analysis. If you look at your 10 best laps, you should be able to interpolate these figure (they're not averages, they're observed maxima and minima). If you can string all the best numbers together in one perfect lap, you may be the next Ayrton Senna, but for the purposes of dialing in the right setup, it isn't necessary.

And unlike the Ferrari or the Eagle, which reward you with actionable feedback, theoretically-correct approaches to setting up the Lotus mostly lead to frustration, not solutions. For example, as the lightest car in the game, it should take the lightest (softest) springs in the game. But the car is so tricky to drive that you'll willingly trade some grip (which comes from supple suspension compliance) for better driveability. You wind up with a much stiffer suspension than logic would lead you to believe.

Thus, I have no idea whether the following is a good setup or not. It's simply the best I can do after hundreds and hundreds of laps, trying every darn thing I can think of. Let me know if it works for you.

Mon_Lot_Q (qualifying; 4 gallons/6 laps)

- LF: 20 psi/65 lbs/3&4 shox/-1.50 deg. camb./1.0-in bumpers/189/189/189 deg.
- RF: 21/70/4&3/-1.25/1.0/169/167/165
- RR: 20/80/5&4/-1.25/1.0/205/204/202
- LR: 19/70/4&5/-.75/1.0/214/214/215

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, O/M/I on the left side and I/M/O on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -.025/0.0 in., F&R
- Bars: 110/80 lbs., F&R
- SRH: 2.0/2.25 in., F&R
- BB: 56% F

- G1: 14/45 9.96
- G2: 16/32 6.20
- G3: 18/29 4.99
- G4: 19/25 4.08
- G5: 27/30 3.44

- R&P: 10/31
- Ramps: 85/60
- Clutches: 2

Data points (see sidebar):

- S/F line: 175 mph Vmax, front straight: 193
- Vmin, Curva Grande: 136
- Vmax, between the C.G. and the 1st Lesmo: 177
- Vmin, 1st Lesmo: 76
- Vmax, between the Lesmos: 122
- Vmin, 2nd Lesmo: 82
- Vmin, Ascari/Vialone: 178
- Vmax, back straight: 192
- Vmin, Parabolica: 69

What can we learn from this? The main reason I'm uncertain about this setup is because of the difficulty I had in preventing the car from pushing in the Curva Grande and the Curva Ascari. In theory, the Cosworth-engined Lotus has more than enough torque to steer with the throttle, even in fifth gear. Indeed, increasing the number of clutches to 3 or more will result in breaking the rear wheels loose with the slightest application of the throttle, but the breakaway is too sudden, too violent for me to handle. I went as low as one clutch, which works better in the slow-speed corners (the Parabolica and the Lesmos), but is too weak to be effective in the Ascari, and barely enough to get the job done in the C.G. With 2 clutches, you have to be more precise in feathering the throttle in the slow stuff, but it transmits enough torque to control the car in the faster turns.

I even reversed the toe settings from those I used for the Ferrari: one click of toe-out in the front (for better "bite"), and zero toe in the rear. Normally, no rear toe would send any other car into

uncontrollable oversteer, but it works fine with the 49. In combination with the toe-out at the front, I could power through the C.G. and the Ascari faster than I've ever gone before. But the stiffer springs and bars seem to have cut my speeds through the slower turns. Wierd. (The car's fantastic acceleration more than makes up for the slightly slower corner speeds. For example, it comes off the Parabolica a mile-an-hour slower than the Ferrari, but is already 10 mph faster at the S/F line. It is a rocket.)

The rest of this qualifying setup is standard stuff. For a racing setup, I made the usual adjustments: a lower coast-side ramp angle in conjunction with one percent more forward weight bias (to enhance stability under braking), but the big change you have to make is to lengthen the top three gears so you're not as likely to overrev the engine. The Cosworth is unrealistically fragile, IMO. (In the real world, it was--and is--a remarkably robust engine, as witness their sheer numbers in vintage racing.) If you buzz it to nine grand in every gear, you will reduce it to rubble within a half-dozen laps. Thus, you want to keep it under, say, 8500-8700 (the F10 view doesn't do a very good job of conveying this gen), particularly in longer races. Note that even when you have the damage model set to "None" (in Training) you can still blow the engine sky-high.

But it's still a b*tch to drive. I like to be super-smooth, but driving this car is really taxing. If I was a better driver, I'd love this car, but I'm not even good enough to like it much. The next car I'll set up, the Eagle, is more my style...and a pistol at Monza!

--[Steve Smith](#)

Making the Eagle Fly

After suffering the Calvinist discipline of shepherding the Lotus around Monza, the Eagle is as welcome as a weekend in Bangkok. It's smooth, supple, forgiving--an almost hedonistic pleasure to drive--and particularly well-suited to the wide-open spaces of Monza. The Eagle's forte is high-speed bends...as witness the highest speeds I've yet seen in the Curvas Grande and Ascari (Vialone): it dips only briefly to 136 mph in the former, and effortlessly sustains 178+ through the latter (see Data Points below).

Not that the Eagle slouches through the slower corners (the Lesmos and the Parabolica). Indeed, its only shortcoming is an anemic low-end, which makes wheelspin easy enough to control, but gives it sluggish acceleration coming off the slow turns: only 168 mph at the S/F line and 117 between the Lesmos. OTOH, its top speed beats all the other cars in the game (I've seen 195-196 mph with different gearing).

Moreover, the Eagle accomplishes all this with almost symmetrical settings (the geometry is symmetrical, front-to-back; and the shocks are symmetrical side-to-side; only the springs are altogether asymmetrical), making it easier to gather the car up if you push it over the edge. You can set the suspension fairly soft (for best grip) and still retain excellent driveability, and you can power through the Ascari curve without resorting to oddball toe settings.

My race setup demands few changes. The forward brake-bias of 56% given here doesn't have to be changed; neither do the ramp angles or clutchpacks. But once again, the engine is unrealistically fragile (that is frangible; I'm not speaking to long-term reliability, which should properly be awful). The power peak is at 10,000 rpm, which would normally mean you could rev it to 10.5K with no fear, but I blew one in a 6-lap Novice race soft-shifting at 9.5K, so choose gears as long as you dare (and still be competitive). Makes you wonder what that rev-limiter is for, huh?

Mon_Eag_Q (qualifying; 4 gallons/6 laps)

- LF: 20 psi/65 lbs/3&4 shox/-1.00 deg. camb./1.0-in bumpers/185/185/184 deg.
- RF: 20/75/4&3/-1.00/1.0/168/166/165
- RR: 19/75/4&3/-.75/1.0/210/207/205
- LR: 19/80/3&4/-.75/1.0/214/214/215

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: 0.0/0.075 in., F&R

- Bars: 90/60 lbs., F&R
 - SRH: 2.0/2.25 in., F&R
 - BB: 56% F
-
- G1: 12/35 9.04
 - G2: 16/32 6.20
 - G3: 17/29 5.29
 - G4: 24/34 4.39
 - G5: 22/26 3.66
-
- R&P: 10/31
 - Ramps: 85/60
 - Clutches: 3

Data points (see sidebar):

- S/F line: 169 mph (172)
- Vmax, front straight: 193 (194)
- Vmin, Curva Grande: 136 (135)
- Vmax, between the C.G. and the 1st Lesmo: 175 (175)
- Vmin, 1st Lesmo: 76 (79)
- Vmax, between the Lesmos: 117 (115)
- Vmin, 2nd Lesmo: 84 (82)
- Vmin, Ascari/Vialone: 179 (170)
- Vmax, back straight: 194 (194)
- Vmin, Parabolica: 72 (70)

The figures in parentheses are from Matt Sentell's wild 1:30 lap of Monza in the Eagle included in the replays that ship with the game. He almost loses it in the C.G., so that number is an interpolation. Or, as they say, "The hurrier I go, the behinder I get."

--[Steve Smith](#)

For the Compleat Novice

I am inspired by a bug to tackle a couple of setups for the unlovely, unloved BRM. An overweight loser, to be sure, but which has one shining virtue: it is a superb trainer for trickier-to-drive rolling stock like the Eagle T1G. The bug is this: if you select Automatic Shifting, the tranny goes nuts, shifting back and forth between second- and third- gear. The solution is obvious: by the time you get to the full-blown GP cars, you should long ago have been weaned away from crutches like automatic transmission.

But, while we're at it, if the BRM is the easiest car in the game, 6-speed and all, then why not the easiest setup for the easiest variant of the easiest car: the low-powered, 4-speed BRM Novice Trainer, with automatic everything: shifting, Braking Help, and Throttle Help? At the easiest track: Monza. You probably don't want to screw up your own .sts file, so you might want to sign up as the chauffeur of the Compleat Novice's car under a nom de drive like New B. Racer, or Wanna B., or L8BRKR. Handy when friends drop over unexpectedly; you've got a car they can drive fast right out of the box without embarrassing themselves.

If you're of a mind, you can edit .ini files so you can also race your Novice Trainer, a class 1 car (GP cars are class 3), against suitably subdued AI cars, and you can download substitute AI files from this site that will bunch up the field, slow them down, or spread them out. But let's start with a setup that makes the most of the 4-speed BRM: it's good for 2-minute laps, which will put you comfortably ahead of the other BRMs (Irwin is usually the quickest), but still several seconds behind Clark, Brabham, et al.

Mon_BRM_Nov (4 gallons/6 laps)

- LF: 21 psi/70 lbs/2&3 shox/-1.00 deg. camb./1.0-in bumpers/141/140/138 deg.
- RF: 21/75/4&3/-.50/1.0/124/123/123
- RR: 20/85/4&2/+.25/1.0/151/151/151
- LR: 20/80/2&4/-.75/1.0/159/157/157

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: 0.0/0.275 in., F&R
- Bars: 100/60 lbs., F&R
- SRH: 2.0/2.25 in., F&R
- BB: 54/46% F&R

- G1: 13/35 8.35
- G2: 16/35 5.81
- G3: 24/34 4.39
- G4: 22/25 4.39

- R&P: 10/31
- Ramps: 85/30
- Clutches: 5

Data points (see sidebar):

- S/F line: 120 mph
- Vmax, front straight: 128
- Vmin, Curva Grande: 110
- Vmax, between the C.G. and the 1st Lesmo: 125
- Vmin, 1st Lesmo: 70
- Vmax, between the Lesmos: 90
- Vmin, 2nd Lesmo: 72
- Vmin, Ascari/Vialone: 125
- Vmax, back straight: 130
- Vmin, Parabolica: 65

The only remarkable thing about this setup is that the rear cambers are a full degree apart! I must've been stonkers. Under the circumstances, the tightly-coupled coast angles (x/30) help keep the rear wheels from brake-steering. Relatively stiff bars, soft springs (for such a heavy car) and shox. Tires never really do get up to grippier temps.

Matching the Bark to the Hype

If you're ready for the real thing, there is no easier a full-boat GP car than the 6-speed BRM T115. Sadly, despite having a couple of extra gears with which to row this stentorian beast around Monza, the ungainly H-16 is not up to the challenge. Almost everywhere at our reference track (see Data Points), the BRM is simply a good 5 or 10 mph slower than the Eagle (in parentheses), despite the BRM's surprising speed whilst actually in the turns. It's the acceleration out of them that proves the T115's undoing.

Mon_BRM_4G6L (4 gallons/6 laps)

- LF: 21 psi/90 lbs/4&3 shox/-1.50 deg. camb./1.0-in bumpers/173/173/174 deg.
- RF: 21/100/5&4/-1.25/1.0/165/162/161
- RR: 20/105/4&3/-.75/1.0/209/207/205
- LR: 20/100/3&2/-1.00/1.0/211/211/211

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the

left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: 0.0/0.175 in., F&R
- Bars: 80/50 lbs., F&R
- SRH: 2.0/2.25 in., F&R
- BB: 54/46% F&R

- G1: 13/46 10.97
- G2: 14/33 7.31
- G3: 16/30 5.81
- G4: 19/29 4.73
- G5: 25/34 4.22
- G6: 23/29 3.91

- R&P: 10/31
- Ramps: 85/60
- Clutches: 4

Data points (see sidebar):

- S/F line: 164 mph (169)
- Vmax, front straight: 187 (193)
- Vmin, Curva Grande: 132 (136)
- Vmax, between the C.G. and the 1st Lesmo: 170 (175)
- Vmin, 1st Lesmo: 74 (76)
- Vmax, between the Lesmos: 114 (117)
- Vmin, 2nd Lesmo: 80 (84)
- Vmin, Ascari/Vialone: 169 (179)
- Vmax, back straight: 188 (194)
- Vmin, Parabolica: 65 (72)

As opposed to the Advanced Trainer, there's a lot more torque trying to drive the chassis straight ahead (push) in the Curva Ascari, so the rear toe-in value is sharply lower, while the springs and shox are significantly stiffer (trading some traction for car control). On the whole, I'd rather be in Pittsburg.

--[Steve Smith](#)

Forza Ferrari!

If there's one track where the Ferrari ought to shine, it's Zandvoort. This swooping, swirling, soaring track puts a premium on the Prancing Horse's forte--handling--not drag racing (the province of that pocket rocket, the Lotus), and not top speed (the baliwick of Dan Gurney's sleek Eagle). Zandvoort also rewards a well-balanced car, which the Eagle is and the Lotus isn't, in my experience. The Lotus is twitchy and hard to drive almost everywhere, while the Eagle is better suited to long-legged venues like the wide-open vistas of Spa. If you do it right, you can cover the whole backside of Zandvoort in one fell swoop (and only one gear change), all the way from the top of the hill behind the pits to the next-to-last turn, Pulleveld (the blind, downhill right). If you can carry enough speed, you can even do the whole stretch in fourth gear, peaking three times: going into Scheivlak (the long downhill right); before the eponymous East Tunnel; and for Panoramabocht (before Pulleveld). The car is never pointed straight; it's segueing left and right in an almost continuous slide, with only one real stab at the brakes, coming up on the tunnel. Thus, more than half the track puts you smack in the middle of the Ferrari's sweet spot: surgically clean steering, and turbine-smooth mid-range acceleration.

Indeed, with my limited-but-consistent driving skills, I have been able to get the Ferrari within a tenth of a second of my best-ever Lotus time (with considerably less pucker-factor), and comparing replays, it's obvious that the Lotus' only real advantage is its low-end grunt (between Tarzan and Gerlachbocht, the hump before Hunza Rug) accounting for the difference.

As usual, this setup will be of limited benefit to the hottest sim drivers, but might prove enlightening to intermediate drivers struggling with a field of over-zealous AI cars.

Zan_Fer_4G8L (4 gallons/8 laps)

- LF: 21 psi/70 lbs/3&3 shox/-1.00 deg. camb./1.0-in bumpers/177/177/177 deg.
- RF: 21/80/4&3/-1.00/1.0/139/137/135
- RR: 20/85/3&3/-0.75/1.0/170/166/163
- LR: 20/85/3&3/-0.75/1.0/182/182/182

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -0.025/.225 in., F&R
- Bars: 90/60 lbs., F&R
- SRH: 2.25/2.25 in., F&R
- BB: 55/45% F&R
- G1: 14/32 7.87
- G2: 17/30 6.08
- G3: 24/33 4.74
- G4: 21/26 4.27
- G5: 25/27 3.72
- R&P: 9/31
- Ramps: 85/60
- Clutches: 1

No surprises here. As is typical of my setups, it is soft (better grip, dicier car control). If I changed anything, it would be to stiffen the bars (to reduce roll) and the shocks (to quicken side-to-side transients), and go even softer on the springs...but that would entail readjusting the ride height and cambers. As it is, I found the front end was scraping with my usual one-inch of suspension travel, so I raised it a quarter inch to match the rear. The front springs are mildly asymmetrical. The front toe is a click negative for more "bite" when you turn in, and the rear toe is a couple of clicks more positive than normal to curb the oversteer induced by all those wild powerslides (the only way to drive this track).

The gearing could probably stand some tweaking, too; it really depends on whether you're lugging or overrevving in G3 or G4, thus, it's a matter of personal preference. [N.B. G1 is way too long for racing starts; but it's tall enough to use in the Hunza Rug hairpin, so you can gain a slight advantage in qualifying.] As are the ramp angles--you want the differential largely unlocked on the coast side to avoid sudden spikes on and off the throttle; you only need 85/45 if you don't have your brakes dialed in. Better drivers can also probably cope with more than one clutch, but I was struggling to get the power down coming off Hunze Rug.

Data points:

Rather than measure speeds at corner apexes here, I decided it might be more precise (some of the apexes seem ill-defined) to take readings directly abeam of the 10 camera positions around the track, thus:

- Camera 1: ca. 150 mph
- Camera 2: 60
- Camera 3: 90
- Camera 4: 55
- Camera 5: 105
- Camera 6: 95
- Camera 7: 130

- Camera 8: 120
- Camera 9: 110
- Camera 10: 105

Let me know how (and if) this works for you.

--[Steve Smith](#)

Ferrari Redux

I went back to my older Ferrari @ Monza setups to see if there was anything I'd learned in the last couple of months that might apply, and arrived at the following setup...which turns out not to be that much different. Slightly more negative front camber, much less asymmetry, a scosh less ride height, a few clicks less rear toe, a slightly taller top gear (I kept blowing engines), a teench more front brake bias, etc. Very stable.

Mon_Fer_4G6L (4 gallons/6 laps)

- LF: 20 psi/65 lbs/2&3 shox/-1.25 deg. camb./1.0-in bumpers/205/203/201 deg.
- RF: 20/75/4&2/-1.25/1.0/172/170/168
- RR: 20/80/4&3/-.50/1.0/206/204/202
- LR: 20/75/3&4/-.50/1.0/212/211/210

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -0.025/.075 in., F&R
- Bars: 90/60 lbs., F&R
- SRH: 1.75/2.00 in., F&R
- BB: 56/44% F&R
- G1: 14/46 10.19
- G2: 15/31 6.41
- G3: 17/30 5.47
- G4: 19/27 4.41
- G5: 26/32 3.82
- R&P: 10/31
- Ramps: 85/45 (or 85/60 w. BB: 57/43)
- Clutches: 4

But I realize this is flogging a dead horse (so to speak). Alison's right; the 312 is "sadly uncompetitive" at Monza. I just love driving the damn thing.

--[Steve Smith](#)

The 400-hp Go-Kart

There's a controversy currently raging among the GPL cogniscenti. Wolfgang Woeger, described by some as "the fastest GPL driver in the world," has been winning a lot of races with a setup that--theoretically--shouldn't work at all. He's been taking all the free jounce/bump travel out of the suspension by shortening the bump rubbers to the minimum (one inch) and setting the SRH (static ride height) also at one inch, thus taking all the compliance out of the suspension and creating--in effect--a 400-hp go-kart.

In theory, this shouldn't work because it raises the spring (and bar) rates to infinity--or close to it--so the car should be skittering across the bumps like a stone skipping across a pond. Of course, there **aren't** any high-frequency bumps in GPL (there are some gentle undulations, but no real sharp

bumps), which might account for the anomaly...but, then, go-karts (and AA Fuel dragsters) don't have any suspensions, either, and they work fine--just ask Michael Schumacher or John Force. In truth, there *is* some compliance in these real-world examples--chassis flex (totally absent in the sim) and the "give" in the tire sidewalls--but I doubt that the smidgen of compressability in the bump rubbers (it's progressive...and probably equals several hundred lbs./in.) accounts for its efficacy in Woeger's GPL setups. A singularity in the physics model, Mr. Kaemmer? To be fair, dropping the chassis onto the bump stops doesn't affect droop/rebound, so the inside tire will still maintain a modicum of contact with the road.

Nonetheless, this phenom is worth a look, if only to see The Impossible for yourself.

Here is Woeger's "Just Say No" setup for the Lotus at Spa. (When Doug Arnao said Spa can take the stiffest suspensions in the game, he wasn't just whistling "I Can't Drive 55.")

Spa_Lot_Wolfi1

- LF: 17 psi/100 lbs/2&3 shox/-1.25 deg. camb./1.0-in bumpers
- RF: 20/100/2&3/-1.25/1.0
- RR: 21/70/2&3/-1.00/1.0
- LR: 21/70/2&3/-1.00/1.0

- Toe: -0.0/.175 in., F&R
- Bars: 120/70 lbs., F&R
- SRH: 1.0/1.0 in. (!), F&R
- BB: 56/44% F&R

- G1: 15/38 7.85
- G2: 17/29 5.29
- G3: 18/26 4.48
- G4: 25/31 3.84
- G5: 24/26 3.36
- R&P: 10/31

- Ramps: 85/60
- Clutches: 2

I tried this setup and found it surprisingly driveable, much easier to control than I ever would have imagined. (My zeal for soft, grippy setups knows no bounds...as is well known; in some circles I'm known as Mr. Softie--no Viagra jokes, please!) It was very manageable exiting Malmedy, quite stable through the infamous Masta Kink, and exhibited only a touch of oversteer under full power coming up out of Stavelot. Everywhere else, it felt more like a real race car than anything else I've tried in GPL...and almost completely eliminated the notorious front-end lateral "porpoising" (hunting) that has plagued every Papy sim since "IndyCar Racing." Best of all, my lap times were a tick faster than any of my high-compliance setups (admittedly, not the best choice for the twitchy Lotus chassis).

Figuring if a little is good, a lot is better, I decided to see what would happen if you took ALL the compliance out of the suspension. I raised the springs, bars, and shocks to their highest values and had a go. Disaster! Totally undriveable. Further experimentation revealed Woeger's spring rates are right on the money, but the car (and my lap times) responded nicely to stiffer bars. On a hunch, I raised the bump/jounce shock values to the max (5) in a calculated attempt to "spread" the transition to the ultra-stiff bumpers, and after some cut-and-try, wound up with slightly softer droop/rebound numbers, to allow the inside wheels some downward deflection. This (with a few subtle changes to the tire pressures, brake balance, and gear ratios) is the result:

Spa_Lot_Wolfi_Mod

- LF: 19 psi/100 lbs/5&4 shox/-1.25 deg. camb./1.0-in bumpers/178/178/181 deg.
- RF: 20/100/5&4/-1.25/1.0/161/159/158
- RR: 21/70/5&4/-1.00/1.0/200/199/196

- LR: 20/70/5&4/-1.00/1.0/203/205/205

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages. Sorry, I didn't record the corresponding numbers for Woeger's original setup.)

- Toe: 0.0/.175 in., F&R
- Bars: 160/100 lbs., F&R
- SRH: 1.0/1.0 in. (!), F&R
- BB: 54/46% F&R

- G1: 15/38 7.85
- G2: 17/29 5.29
- G3: 19/27 4.41
- G4: 26/32 3.82
- G5: 24/26 3.36

- R&P: 10/31
- Ramps: 85/60
- Clutches: 2

This worked like gangbusters: I knocked almost a full *six seconds* off my previous best time. It may defy the laws of physics...but it's made a believer out of me. Thanks, Wolfi!

Try it and let me know what you think.

--[Steve Smith](#)

[Continue](#) to Part Two

Steve Smith's

Advanced Setup Guide

Part Two

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Completing the Circle

Constant-reader Grant Hargrave (a Canadian who's had the incredible luck to live in Paris for the past several years) writes to remind me that while I have published my idea of hot setups for the F2 and F3 BRM, I omitted to do likewise for the full-zoot F1 BRM. So he took the bull by the horns, and, "After reading your thing about the 400hp go-kart (Wolf Woeger's "zero-compliance" approach to chassis settings), I went to Monza, jumped in my BRM, bumped up the roll bars and wheel rates by an arbitrary amount, and improved my best BRM time by a significant amount. The car was much more controllable--it felt like there was glue on the tires. I did three laps, set my best time (no spins; that too may be a record), and the only way I could lose it was by trying to take the Curva Grande at full tilt."

Grant omitted to include his settings, so I took a stab at implementing Wolfi's thesis myself:

Mon_BRM_Wolfish

- LF: 20 psi/85 lbs/4&5 shox/-1.25 deg. camb./1.0-in bumpers/180/180/181 deg.
- RF: 21/95/4&5/-1.25/1.0/161/159/156
- RR: 20/105/4&5/-1.00/1.0/210/208/204
- LR: 19/100/4&5/-1.00/1.0/214/214/215

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -.025/.075 in., F&R
- Bars: 120/100 lbs., F&R
- SRH: 1.0/1.0 in. (!), F&R
- BB: 52/48% F&R

- G1: 13/46 10.97
- G2: 15/33 6.82
- G3: 20/38 5.89
- G4: 18/29 4.99
- G5: 21/29 4.28
- G6: 26/32 3.82

- R&P: 10/31
- Ramps: 85/45
- Clutches: 4

This indeed also resulted in a new personal-best BRM time for yr. obt. srvnt., so I retroactively applied the same recipe to a Spa setup (where Herr Woeger achieved his initial success):

Spa_BRM_Wolfish

- LF: 20 psi/90 lbs/4&5 shox/-1.25 deg. camb./1.0-in bumpers/182/183/184 deg.
- RF: 20/100/4&5/-1.25/1.0/166/164/162

- RR: 20/110/4&5/-1.00/1.0/212/210/208
- LR: 20/105/4&5/-1.00/1.0/217/218/219
- Toe: -.025/.125 in., F&R
- Bars: 120/90 lbs., F&R
- SRH: 1.0/1.0 in. (!), F&R
- BB: 52/48% F&R
- G1: 14/46 10.19
- G2: 15/32 6.61
- G3: 17/30 5.47
- G4: 21/32 4.72
- G5: 25/33 4.09
- G6: 27/32 3.67
- R&P: 10/31
- Ramps: 85/45
- Clutches: 4

A nice ride, and another best (for my BRM) lapttime, but alas, I don't see much future in this. The BRM is never going to be competitive (except in spec races), so why bother? OTOH, Alison is having excellent results with the Hond...er, Murasama and the, ah, Coventry, so next I will see what I can eke out of these chassis with rock-hard suspensions.

--[Steve Smith](#)

The Joy of Formula 2

As usual, Dave Kaemmer was right. The godfather of auto racing sims (and auteur of Papyrus' legion of genre-defining games) warned me not to dismiss out of hand GPL's lower-powered Formula 2 and Formula 3 cars (called--for legal reasons--the Advanced Trainer and Novice Trainer, resp.) in "Four-Wheel Drift," the strategy guide that shipped with the game. So what did I do? I dismissed the F2 and F3 cars out of hand.

My reasoning was that these "training wheels" (ca. 270 horsepower for the F2 car and ca. 135 hp for the F3, according to Kaemmer, although the real-world figures were more like 200 and 125 hp; they also have slightly less grip) are so different from the full-blown Formula 1 cars (called "Grand Prix" cars in the game, again for legal reasons) that nothing you might learn from mastering them would prepare you for the shock of the 400-hp GP cars (with about as much traction as a modern NASCAR stocker--their speeds up through the Esses at Watkins Glen are startlingly similar).

My solution: short shift. By simply keeping the revs below about 6000 rpm, I reckoned you could get familiar with the F1 car chassis without all that tire-shredding torque, and not have to unlearn all those bad habits you'd likely acquire from driving the mild-mannered F2/F3 chassis. In other words, you can't realistically "practice" for a nuclear strike; you either do it or you don't.

I have come belatedly to appreciate the joys of the "trainers," particularly the F2 cars, not so much as learning aids (I still don't think they have much application here), but in their own right. Sure, they're easier to drive. And more rewarding. As anybody who's ever owned a Fiat 750 knows, it's a lot more fun to drive a little car fast than a big one. However, that's not the half of it.

The implications for online racing are potentially enormous. If anybody puts together a viable F2 or F3 series (or both), GPL will have the "farm" system it needs. And unlike the F1 events, F2 and F3 races have little or no appeal to the kind of bozos who like to crash out of races, taking as many legitimate competitors with them as possible. (Although, heck, there are already "over-40" online leagues for duffers like me.) Or to those who can cut the occasional 1:05 lap at the Glen...but can't keep it on the road for a 9-lap sprint race. You really have to be **serious** about racing to want to drive in the low-powered classes.

Implications for AI racing, too. I find the AI cars much easier to contend with in the lower classes.

Instead of worrying about controlling my own car (the F1 cars always feel like I have a tiger by the tail...and can't let go), I have a lot more freedom to concentrate on the opposition. (You can force the AI cars to race at F2 or F3 speeds simply by going to your player.ini file and changing the "driverRating =" figure in the Personal Information stanza to "2" for F2 or "1" for F3...confusing, but true.)

Not only do the F2/F3 cars require different driving techniques (it's much harder to use the throttle to steer the car, for one thing; for another, you will also come to treasure every precious rpm that you've squandered in the big cars; and you'll find the correct "line" becomes much more important...and do-able), they also require different setups. Having 400 horsepower on tap can mask a lot of chassis faults. Making do with less is tricky. By now I've spent a hundred hours or so in the little buzz-bombs (they have a stentorian, 4-cylinder honk), and am here to report that they are *enormously* sensitive to minute changes in shock and--particularly--toe settings (more so than, say, spring and bar rates, to which they are kind of numb, except at the extremes).

But while the F2 cars are within a couple of seconds-per-lap of the F1 times (at most tracks), the F3 cars are way off the pace. So slow that half the corners at Spa, say, simply cease to exist. You can take the Masta kink (or Monza's Curva Grande) flat out, for example. (I know, I know--you never lift anyway.) There is some historical precedent here. The F3 cars raced on many of the same circuits (the F3 bash at Monte Carlo was infamous), and the F2 cars sometimes raced concurrently with the F1 fields (Jackie Ickx was sensational at the German GP in a F2 Matra), but for the most part, the F3 cars simply aren't all that challenging (nor, with only 4 gears, are they that easy to set up), so I'll confine the rest of this discussion to the F2 Lotus. (Tip: the AI cars are a pushover at Silverstone, if you haven't won a race yet.)

Another couple of benefits: the F2 and--particularly--the F3 engines aren't nearly as frangible as the GP cars', and the lower-powered cars don't lunge off the line with as much ferocity.

As ornery as the Lotus is in its F1 guise, it is a dreamboat to drive in F2. Again, the best in class, but without the life-and-death struggle to keep it on the road. Another couple of arbitrary limitations: I have yet to master the Ring (I'm saving the best for last); I have never liked Mexico; and I'm still embarrassingly slow at Monte Carlo, so I offer no advice for these tracks. As for the others:

Kya_Lot_F2

- LF: 21 psi/80 lbs/4&5 shox/-1.00 deg. camb./1.0-in bumpers/172/174/174 deg.
- RF: 21/80/4&5/-1.00/1.0/153/150/148
- RR: 21/90/4&4/-0.75/1.0/163/162/159
- LR: 21/90/4&4/-0.75/1.0/172/172/171

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -.025/.025 in., F&R
- Bars: 100/80 lbs., F&R
- SRH: 1.25/1.25 in., F&R
- BB: 52/48% F&R

- G1: 14/33 7.31
- G2: 17/29 5.29
- G3: 19/27 4.41
- G4: 26/33 3.94
- G5: 22/25 3.52
- Vmax: 166 mph

- R&P: 10/31
- Ramps: 85/60
- Clutches: 1

Track notes: This seems like the lowest-traction venue in GPL, but two of the slowest turns (Crowthorne and Clubhouse) are reverse camber, which doesn't help. I tried to set the car up the way

CART teams do for low-speed, high-G street circuits (e.g., disconnect the bars), but after a lot of fruitless experimentation I wound up with settings little different from the other tracks in GPL.

Mon_Lot_F2

- LF: 21 psi/75 lbs/5&5 shox/-1.25 deg. camb./1.0-in bumpers/168/168/168 deg.
- RF: 21/80/5&5/-1.25/1.0/146/144/142
- RR: 20/85/4&4/-0.75/1.0/176/174/172
- LR: 20/90/4&4/-0.75/1.0/180/180/180

- Toe: -.025/.000 in., F&R
- Bars: 120/60 lbs., F&R
- SRH: 1.25/1.25 in., F&R
- BB: 54/46% F&R

- G1: 14/45 9.96
- G2: 16/30 5.81
- G3: 21/32 4.72
- G4: 21/27 3.99
- G5: 22/25 3.52
- Vmax: 168 mph

- R&P: 10/31
- Ramps: 85/60
- Clutches: 2

Track notes: I've been 'round the barn with asymmetrical setups here, but in the end I'm only willing to risk dissimilar spring rates (asymmetrical geometry tends to throw the car off balance under braking). Unlike the big cars, you don't need to promote oversteer for the della Roggia and Ascari turns. I set the coast-side ramp angle high to smooth the throttle transients, and simply ate the braking hit at the end of the back straight.

Mos_Lot_F2

- LF: 21 psi/80 lbs/4&5 shox/-1.00 deg. camb./1.0-in bumpers/166/164/162 deg.
- RF: 21/80/4&5/-1.00/1.0/148/146/144
- RR: 21/90/3&4/-0.75/1.0/169/168/166
- LR: 21/90/3&4/-0.75/1.0/167/167/167

- Toe: -.025/.025 in., F&R
- Bars: 100/80 lbs., F&R
- SRH: 1.75/1.75 in., F&R
- BB: 52/48% F&R

- G1: 14/45 9.96
- G2: 17/31 5.65
- G3: 19/28 4.57
- G4: 21/27 3.99
- G5: 27/31 3.56
- Vmax: 154

- R&P: 10/31
- Ramps: 85/60
- Clutches: 1

Track notes: Like Zandvoort, you've got to have the right intermediate gears here, because you use

them a lot. Likewise, you need the right G1 to pull you out of the Moss hairpin without wheelspin. Likewise, the right top gear, so you peak just going over the crest of the hill. (Can-Am cars did spectacular back-flips here in the late '60s.) Also like Zandvoort, you need absolute steering authority-- you cannot afford an "off."

Rou_Lot_F2

- LF: 21 psi/90 lbs/4&4 shox/-1.00 deg. camb./1.0-in bumpers/150/151/151 deg.
- RF: 21/90/4&4/-1.00/1.0/135/134/133
- RR: 21/80/3&4/-0.75/1.0/160/158/157
- LR: 21/80/3&4/-0.75/1.0/163/164/164

- Toe: -.025/.075 in., F&R
- Bars: 110/70 lbs., F&R
- SRH: 1.50/1.50 in., F&R
- BB: 54/46% F&R

- G1: 14/32 7.09
- G2: 17/29 5.29
- G3: 25/34 4.22
- G4: 19/23 3.75
- G5: 22/25 3.52
- Vmax: 167

- R&P: 10/31
- Ramps: 85/45
- Clutches: 1

Track notes: The Nouveau Monde hairpin is a pisser, isn't it? I invariably overshoot or undershoot. You need to move the brake balance forward so you can retain some ability to steer whilst braking. I'll admit to trying to learn Rouen with all the driver "aids" (ABS, ATC, auto shifter) turned on, but that darned hairpin almost always gets me anyway. I juggled the gears until the shift points were moved away from corner exits (where spiking the torque can unsettle the car).

Sil_Lot_F2

- LF: 21 psi/75 lbs/3&4 shox/-1.00 deg. camb./1.0-in bumpers/145/146/147 deg.
- RF: 21/85/3&4/-1.00/1.0/136/134/133
- RR: 21/90/3&4/-0.75/1.0/161/159/157
- LR: 20/85/3&4/-0.75/1.0/161/161/162

- Toe: -.025/.025 in., F&R
- Bars: 100/80 lbs., F&R
- SRH: 1.25/1.25 in., F&R
- BB: 52/48% F&R

- G1: 14/45 9.96
- G2: 16/30 5.81
- G3: 18/28 4.82
- G4: 25/33 4.09
- G5: 19/23 3.75
- Vmax: 151

- R&P: 10/31
- Ramps: 85/60
- Clutches: 2

Track notes: Handling is immaterial here; the track is a 5-pointed star, so you just need to have the right gears to pull smartly from one point to the next. Even the Hangar Straight, which looked so long in Geoff Crammond's F1 sims, is barely good for 150 mph in a F2 car. All in all, a boring track with a low cockpit workload (unlike, say, Mosport, which really wrings you out). Drag racing, anyone?

Spa_Lot_F2

- LF: 21 psi/100 lbs/5&4 shox/-1.25 deg. camb./1.0-in bumpers/162/163/164 deg.
- RF: 21/100/5&4/-1.25/1.0/149/148/147
- RR: 21/90/5&3/-.75/1.0/179/178/176
- LR: 20/90/5&3/-.75/1.0/183/184/185

- Toe: .000/.000 in. (!), F&R
- Bars: 120/60 lbs., F&R
- SRH: 1.00/1.00 in. (!), F&R
- BB: 52/48% F&R

- G1: 15/38 7.85
- G2: 17/31 5.65
- G3: 18/26 4.48
- G4: 26/32 3.82
- G5: 29/32 3.42
- Vmax: 174

- R&P: 10/31
- Ramps: 85/45
- Clutches: 2

Track notes: Just as with the F1 cars, Spa demands the stiffest setups in the game. To maximize your Vmax (top speed), you can set the front and rear toe to zero to minimize rolling resistance. Note that I've applied Wolfi Woeger's "zero compliance" (low-rider) setup principle here. Seems to work; I've been competitive with the AI cars.

WG_Lot_F2

- LF: 20 psi/90 lbs/3&4 shox/-1.00 deg. camb./1.0-in bumpers/171/171/172 deg.
- RF: 21/100/4&3/-1.00/1.0/140/137/135
- RR: 21/95/4&3/-.75/1.0/168/165/162
- LR: 20/90/3&4/-.75/1.0/176/176/175

- Toe: -.025/.000 in., F&R
- Bars: 100/90 lbs., F&R
- SRH: 1.50/1.50 in., F&R
- BB: 54/46% F&R

- G1: 12/35 10.05
- G2: 17/29 5.88
- G3: 24/34 4.88
- G4: 21/26 4.27
- G5: 24/26 3.73
- Vmax: 160

- R&P: 9/31
- Ramps: 85/30
- Clutches: 1

Track notes: One of two tracks that *always* demand asymmetrical setups (Monza is the other). The track's high crown (camber) makes dialing in the suspension camber tricky. The Lotus usually takes either -1.00 or -1.25 deg at the front; here it's the former. If you're really leaning on it, you might even try -.75 (the faux banking effect promotes negative camber gain). Your setup should emphasize stability through the Esses...and maximize your exit speed as you spill onto the straight.

Zan_Lot_F2

- LF: 20 psi/80 lbs/3&4 shox/-1.00 deg. camb./1.0-in bumpers/178/178/179 deg.
- RF: 21/80/3&4/-1.00/1.0/147/144/142
- RR: 20/70/3&4/-.75/1.0/171/167/165
- LR: 20/70/3&4/-.75/1.0/178/178/179

- Toe: -.025/.225 in., F&R
- Bars: 120/60 lbs., F&R
- SRH: 1.75/1.75 in., F&R
- BB: 53/47% F&R

- G1: 14/32 7.09
- G2: 17/31 5.65
- G3: 19/28 4.57
- G4: 21/27 3.99
- G5: 25/29 3.60
- Vmax: 158 (hmmm....)

- R&P: 10/31
- Ramps: 85/60
- Clutches: 1

Track notes: Home of the partial throttle (I get leg cramps just thinking about it). You're almost never all the way on the loud pedal...or off it. You need to unlock the coast-side ramp angles to soften the many throttle transients, even at the expense of braking for Tarzan. And I find micrometric adjustments to the toe--particularly at the rear--strongly affect the car's balance here.

These dalliances may have no application whatsoever to furthering your career in F1, but if you're frustrated in the Big Time, give F2 (or F3) a try. I'll eat my virtual hat if you don't enjoy the change.

New section on the Brabham added 4/3/99:

Further to Formula 2

As I suspected, the F2 cars all use the same (270-hp, approx.) "spec" engine, as reader Michael Hausknecht proved by running extensive fourth-gear acceleration tests from 60 to 100 mph (to avoid wheelspin and aero artifacts) with the cars ballasted to the same weight, same gearing, same number of clutches, etc. All other chassis parameters for each F2 car, i.e., weight, weight distribution, polar moment, physical dimensions, gearing, etc., appear to be simply carried over from their F1 counterparts. This suggests that the lightest car in the game should have an inestimable advantage in F2 (unlike the F1 cars, where heavyweights like the Honda and the BRM are somewhat compensated by having more powerful engines). Michael reasoned that since the Brabham is the lightest chassis, it should be the fastest car, so I undertook another round of tests--groan!--to prove or disprove his theory.

Indeed, at each track, the Brabham achieved a higher Vmax (top speed) than the Lotus, suggesting that it has less aerodynamic drag (probably not its Cd., which is a relative figure, but almost certainly due to its smaller frontal area). The obvious venue to put this to the test is Spa, with its wide-open straights. Sure enough, the Brabham's higher top speed (by 2-4 mph in most instances) translated into faster lap times there...by almost two seconds/lap. Again, at Monza, the F2 Brabham (which would be the BT-23 upon which the F1 BT-24 was based) was faster...but only by a couple tenths of a second. And also at Silverstone (by a couple of tenths), which is simply eight drag races per lap (and a farly

low Vmax), favoring the Brabham's lighter weight...cornering ability--or the lack of it--to the contrary notwithstanding.

Everywhere else, however, the Lotus (which would be the Lotus 48, no relation whatsoever to the 49) cut slightly faster laps, probably because it's easier to drive at the limit. That is, easier for *me* to drive. (N.B. Since the Ferrari is also reasonably light, I tried a couple of setups for Zandvoort, a pure handling track where the F1 Ferrari always shows up well against the competition. [There *was* a F2 Ferrari, BTW, the Tipo 166, but it didn't appear until 1968, Tino Brambilla up.] No joy. I have no idea why, and I'm too burned out by now to conjure any effete theories, much less the tests that would prove them out.) Anyway, these are the setups I brewed up for the Brabham.

Kya_Bra_F2

- LF: 20 psi/80 lbs/4&5 shox/-1.00 deg. camb./1.0-in bumpers
- RF: 21/80/4&5/-1.00/1.0
- RR: 21/85/3&4/-1.00/1.0
- LR: 20/85/3&4/-1.00/1.0

- Toe: -.025/0.0 in., F&R
- Bars: 100/50 lbs., F&R
- SRH: 1.25/1.25 in., F&R
- BB: 52/48% F&R

- G1: 14/33 7.31
- G2: 17/29 5.29
- G3: 24/32 4.59
- G4: 19/22 3.99
- G5: 24/24 3.44
- Vmax: 172 mph

- R&P: 9/31
- Ramps: 85/60
- Clutches: 1

Track notes: Sorry, I lost my tire-temp notes. Given the Brabham's higher top speed and the extraordinary length of the straight here, I was surprised that the Lotus was faster...at least with me at the wheel. A better chauffeur could undoubtedly get more out of the BT-23 chassis, but he/she be not me.

Mon_Bra_F2

- LF: 20 psi/70 lbs/5&5 shox/-1.25 deg. camb./1.0-in bumpers/180/180/180 deg.
- RF: 21/80/5&5/-1.25/1.0/151/148/146
- RR: 21/85/4&4/-1.00/1.0/186/184/180
- LR: 20/80/4&4/-1.00/1.0/196/196/196

(N.B. The last three numbers on each line are the tire temps, as measured at the S/F line, OMI on the left side and IMO on the right, just as they are shown in the boxes on the setup pages.)

- Toe: -.025/.025 in., F&R
- Bars: 100/50 lbs., F&R
- SRH: 1.25/1.25 in., F&R
- BB: 52/48% F&R

- G1: 14/45 9.96

- G2: 17/29 5.29
 - G3: 24/34 4.39
 - G4: 27/32 3.67
 - G5: 23/24 3.24
 - Vmax: 174 mph (before the Parabolica)
-
- R&P: 10/31
 - Ramps: 85/45
 - Clutches: 1

Track notes: This setup is only 2/10ths sec. faster than my Lotus setup, and not nearly as easy to drive. For qualifying, I shorten G2-G5 and just rev it to death (although I still have to shift up and down between the two Lesmos, something I'd go to almost any lengths to avoid in the squirrelier F1 cars).

Sil_Bra_F2

- LF: 21 psi/70 lbs/4&5 shox/-1.00 deg. camb./1.0-in bumpers/166/167/167 deg.
 - RF: 21/75/4&5/-1.00/1.0/164/163/160
 - RR: 21/80/4&4/-0.75/1.0/194/192/191
 - LR: 20/75/4&4/-0.75/1.0/191/190/187
-
- Toe: -.025/.025 in., F&R
 - Bars: 130/60 lbs., F&R
 - SRH: 1.50/1.75 in., F&R
 - BB: 53/47% F&R
-
- G1: 14/32 7.87
 - G2: 17/29 5.88
 - G3: 24/32 4.59
 - G4: 25/29 3.99
 - G5: 23/24 3.59
 - Vmax: 155 mph
-
- R&P: 9/31
 - Ramps: 85/60
 - Clutches: 1

Track notes: What can I say? The world's most boring track. It's hard to imagine Blighty managed to produce superstars like Moss, et alia, if this is where they learned to race. Too bad the 1967 British GP wasn't held at Brands Hatch. And those 4-abreast starts! Yackety-schmackety.

Spa_Bra_F2

- LF: 20 psi/75 lbs/4&5 shox/-1.00 deg. camb./1.0-in bumpers/181/181/181 deg.
 - RF: 21/75/4&5/-1.00/1.0/160/159/158
 - RR: 20/80/3&4/-1.00/1.0/194/192/189
 - LR: 20/80/3&4/-1.00/1.0/196/198/199
-
- Toe: -.025/0.0 in., F&R
 - Bars: 110/70 lbs., F&R
 - SRH: 1.25/1.50 in., F&R
 - BB: 53/47% F&R

- G1: 14/32 7.09
- G2: 17/29 5.29
- G3: 24/33 4.26
- G4: 28/32 3.54
- G5: 24/24 3.10
- Vmax: 179 mph (before the dreaded Masta kink)

- R&P: 10/31
- Ramps: 85/60
- Clutches: 2

Track notes: I had to powerslide the car around like Black Jack (Brabham) himself to smooth out the response/gain of the car's suspension system, i.e., it's easier to drive fast than slow. This is a Q and Novice-race setup, with G4 short enough that you max out before Haut de la Cote (at the top of the hill), and again before Blanchimont, the penultimate turn. For longer races, where engine fragility becomes critical, I lengthen G4 to 25/28 (3.47) to keep the engine under 7500 rpm and/or eliminate 2 shifts.

For comparative purposes, here are my best F2 times to date (bear in mind, I'm not the fastest knife in the drawer, but the setups above were good enough to get me on the front row at each track with a box-stock driver.ini and a well-seasoned NPT):

Kyalami/Lotus 1:28.16
Mexico/Lotus 2:01.76
Monza/Brabham 1:37.32
Mosport/Lotus 1:30.68
Rouen/Lotus 2:12.28
Silverst'n/Brabham 1:37.32
Spa/Brabham 3:38.16
The Glen/Lotus 1:11.17
Zandvoort/Lotus 1:33.73

I'm sure you can do better. Make my day: email me and tell me by how much.

-- [Steve Smith](#)

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Steve Smith's

Advanced Setup Guide

Addendum

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Discussion

Promises, Promises

I'm braking early enough [for Big Bend] but I'm over-estimating how much speed I can carry and coming in too hot. When I do get it right I'm too busy congratulating myself to remember to brake for the Ninety!

--Art McEwen, mcewena@mohyf-mx1.mohdev.gov.on.ca

Infuriating, isn't it? After a while, it will come to you just from having done it a hundred times. Or, more precisely, from *not* doing it a hundred times: "If I hate going off there so much, how come I do it every lap?" And of course it comes near the end of the lap, so if you think you're on a hot one, the tendency is to push it...just a little too hard. This is one mighty incentive to develop setups that work for you...and to learn driving techniques, like trail-braking (which demands some chassis-tuning savvy), which will see you through BB. Like many turns in GPL (the first Lesmo is another example), I've abandoned the old racers'-school approach of using all the road to straighten out the turn, instead using all the road to "buy" some extra space for braking: come in low on the inside (not on the other side of the crown on the left), and if you're carrying too much speed, you can use the width of the track, diagonally, to brake in a straight line. You wind up on the left side of the track just past the apex pointing kind of the wrong way...but still on the pavement. Your lap is ruined, but at least you don't have to suffer the ignominy of yet another Shift-R.

Another SCCA Regional-level "rule of thumb" you can ignore in GPL is using the brakes once per corner entry. I've watched Matt Sentell dance on the pedals all the way to the apex, pumping the brakes in short, asynchronous strokes; alternating with a fairly aggressive throttle, frequently using both at once (which only works if you have the throttle and brakes on separate axes--impossible with some controllers like the TSW2). He kind of urges the car around BB, relentlessly. As you gather experience, you can segue smoothly from the first approach ("against the rail" in horse-racing parlance) to something both more conventional (approaching the turn from the outside) and more radical (real-world race-instructor Doug Arnao was appalled--he watched Matt's fancy footwork for a couple of very hairy laps before leaning over to me and whispering "Overdriving").

Actually, the part of the Glen I have the most trouble with is the nameless lefthand kink between BB and the Ninety. If you do it right, you use the energy stored in the springs like a pendulum to whip-saw you back from exiting BB to your entry into the kink (staying close to the lefthand verge). Then, exiting the kink, stay to the right, and brake in a straight line on the inside, against the rail, for the Ninety. Gearing here can be tricky, too. Basically, you want to avoid having to shift up again after the left kink, but this usually means you either lug the engine well below its power peak through the kink (making it near-impossible to steer with the throttle), or risk blowing the engine overrevving in a lower gear. Frustrating.

Watkins Glen is one wierd little track in GPL. The right setup can make a huge difference in your comfort level. When, as, and if I ever find the time, I'll try and come up with something special (the Brabham worked well for me here) and post it.

--[Steve Smith](#)

You might also want to check out a new article about Jim Clark's driving technique, entitled "[Why Jim Clark had the Edge](#)". - Alison

Give 'Em a Brake

"I'm a bit confused about your discussion of brake bias. It seems to me that adding rear bias would make the car more stable under braking, and adding front bias would increase the overall braking performance because of forward weight transfer (the fronts are less likely to lock up under neutral brake bias). In your [Advanced Setup Guide], you convey the opposite idea, and suggest front brake bias for stability. Could you please elucidate this for me?"

--George Mohr

This goes to the old truism, "A sliding tire has no directional integrity." If you lock up the fronts, the still-rolling rears simply follow along behind. If you lock up the rears, they will try to pass the fronts. But you can skip the theory, and go straight to the field test: move the balance rearward, switch to the Nintendo view (F10), and watch smoke pour off the rears as the car spins. Move it forward and you can stop the car in a straight line as smoke billows from the fronts, only not as fast as you can if you adjust the balance to get smoke to appear simultaneously at all four corners. If you want to trail-brake or just want a little extra stability, you move the balance a percent or two ahead of the theoretical optimum. BTW, I got one helluva argument going by suggesting the fastest way to stop a car is to lock up all four tires. Burning rubber will give you maximum traction (ask any drag racer), but with seriously reduced directional stability (which is why dragsters have their rear wheels much closer together than the fronts). Let the flames begin!

"I'm focusing on brakes because I'm being out-braked by the AI (particularly going into Parabolica). They appear to be trail braking, but I can't get that technique nailed. I was hoping for a setup fix (read, I too lame to drive better!). They come into that corner about 5 MPH faster than me, get a bit loose, and hook up just right to nail the apex."

--George Mohr

It ain't you, it's the "A" in AI. They are all (to a man, even the backmarkers) Sierra Hotel going into the 'bolica. OTOH, they are slow as mud hens going through the Curva Grande, and not much better going into the first Lesmo...even though their lap times (when the GHS is working) are the same as yours. The solution--to avoid being passed--that presents itself is simple: block them going into the final turn. You can sometimes fake them out on the Rettificio Centrale by weaving, but it's better to sit astride the center of the track going in, then trail-brake to an early apex (a pretty good idea in any case, but it does take some adjustments to your setup and driving technique), and force them to try to take you on the outside coming out. Just keep "spilling" wide (unwinding steering lock) and try to "scrape them off your shoe" against the guardrail. This makes them mad as hell, as you'll be able to hear from the sound of the hornet-swarm behind you.

That's to avoid losing position. For passing, try to keep on their tail(s) traversing the length of the front straight. If you can stick within maybe two car-lengths, you will get enough of a tow to "slingshot" past them just as you hit the (premature) braking marks on the "groove." Don't forget a) you're going to be going into the C.G. 5 mph faster than usual, so you're going to need a lot more than "threshold" braking, and b) you should be prepped for this with a longer-than-normal 5th gear.

If you can't get close enough to catch a draft, you can still pull a car length or two on them going through the C.G., which may put you close enough to outbrake them going into Lesmo # 1 (they're much slower here than going into the Parabolica), or, if not, take a late apex and try to get inside them between the two Lesmos. I wish I could say this works for me, but I usually lose my cool and spin it.

--[Steve Smith](#)

Putting the AI in Their Place

"I'm focusing on brakes because I'm being out-braked by the AI (particularly going into Parabolica). They appear to be trail braking, but I can't get that technique nailed. I was hoping for a setup fix (read, I too lame to drive better!). They come into that corner about 5 MPH faster than me, get a bit loose, and hook up just right to nail the apex. Whew."

--George Mohr

It ain't you, it's the "A" in AI. They are all (to a man, even the backmarkers) Sierra Hotel going into the 'bolica. OTOH, they are slow as mud hens going through the Curva Grande, and not much better going into the first Lesmo...even though their lap times (when the GHS is working) are the same as yours. The solution--to avoid being passed--that presents itself is simple: block them going into the final turn. You can sometimes fake them out on the Rettificio Centrale by weaving, but it's better to sit astride the center of the track going in, then trail-brake to an early apex (a pretty good idea in any case, but it does take some adjustments to your setup and driving technique), and force them to try to take you on the outside coming out. Just keep "spilling" wide (unwinding steering lock) and try to "scrape them off your shoe" against the guardrail. This makes them mad as hell, as you'll be able to hear from the sound of the hornet-swarm behind you.

That's to avoid losing position. For passing, try to keep on their tail(s) traversing the length of the straight. If you can stick within maybe two car-lengths, you will get enough of a tow to "slingshot" past them just as you hit the (premature) braking marks on the "groove." Don't forget a) you're going to be going into the C.G. 5 mph faster than usual, so you're going to need a lot more than "threshold" braking, and b) you should have prepped for this with a longer-than-normal 5th gear.

If you can't get close enough to catch a draft, you can still pull a car length or two on them going through the C.G., which may put you close enough to outbrake them going into Lesmo # 1 (they're much slower here than going into the Parabolica), or, if not, take a late apex and try to get inside them between the two Lesmos. I wish I could say this works for me, but I usually lose my cool and spin it.

--[Steve Smith](#)

Topping Out in the Eagle

I have been running the Eagle, and am starting to put together very consistent laps (I even ran a race that for over six laps in a row my times were within .25 sec of each other), but I need more speed to compete with the Lotus.

Racing at Rouen in an Eagle is difficult too; the lightweight Lotus just flies up the long uphill section, passing my Eagle like it's standing still. I feel like I am topped out in the Eagle. Any suggestions? (Switching to Lotus is not an option, except to compare.)

--Brain Heiland

Hmmmmn, the Eagle is usually the fastest car in the game...at least in the players' hands (I can't remember being blown off in a straight line by any AI cars except the Murasama). I've seen 195 mph in the Eagle at Monza, and 200 at Spa (on the slightly downhill Masta straight). If you're not getting this, the obvious place to look is at the gearing, but before you do, check your controller's calibration: there's no way you can tell if you're not getting full throttle or not, so re-calibrating might fix your problem.

If it turns out it is the gearing, there are two schools of thought. One says gear tight, so you reach peak rpm sooner, and carry that speed all the way down the straight (albeit at a lower Vmax), although you will have to "ride" the rev limiter to avoid overrevving the engine. The other says simply go for the highest observed Vmax. I'm a member of the latter school, if for no other reason than I don't have the discipline: if I see a car whiz past me and I'm feathering the throttle, I'll put it to the wood and blow the engine...every time.

The Lotus, BTW, may be lightweight, but its top speed is nothing special--normally at least a couple of mph slower than the Eagle. It gets its superior lap times from tremendous mid-range acceleration.

--[Steve Smith](#)

Crooked Braking

<<[My] main problem is that the car keeps on wandering over to the right under braking. I've tinkered with camber, rollbar stiffness, etc., but I can't seem to stop it happening. Is it possible to cure or at least tame this?>>

--Paul Thorp <Paul@intactns.force9.co.uk>

If it's consistently to the right, you can rule out driver error...unless there's something you're not telling. And if your suspension settings are symmetrical, then it's probably a miscalibrated controller. If your setups are asymmetrical (not recommended except for the few lopsided tracks like Monza and the Glen), then coaxing them back towards some semblance of symmetry ought to help.

The only other condition I know of under which the car pulls to one side or the other is after you've hit something with the car hard enough to bend a suspension arm. If this happens, don't bother trying to soldier on; it only gets worse (like Clark's wheel getting more and more adrift the last 3 laps of the U.S. GP that year). If you're in a Novice race, hit Shift-R. Otherwise, park it.

--[Steve Smith](#)

I Want to Take You Higher

I was wondering if you have any Ferrari setup tips for Spa-Francorchamps. I can't seem to get as much straightline speed as the computer Ferraris, no matter what changes I make. The chassis feels good and the car drives real sweet, but I'm at least 4-5 MPH slower down the Masta straight than the computer Ferraris. In the corners I can hold my own, but the lack of top end is killing me. I can accept not having the same top speed as the Eagle or the Lotus, but I ought to be able to get the same top speed as the AI Ferraris. If you can help me wring more top speed out of my Ferrari at Spa, I would be very happy. Right now my highest speed is 196 (right before I brake for the kink). That just isn't good enough.

--Steve Cook

"Ought to"? Sorry. The AI cars don't play by the same rules as our cars. Their physics model is greatly simplified (or else the game would require massively parallel Katmai CPUs), and sometimes we get spanked in ways that seem unfair. Among other things, they seem to be able to continually pull peak revs that would reduce our motors to smoking slag heaps within a couple of laps. Have you noticed that they also require tiny, delicate steering inputs, as opposed to the wild, lock-to-lock oscillations necessary to keep our bolides greasy-side down?

Nonetheless, you might be able to eke a few more mph out of your Ferrari (although I haven't seen more than 196 mph myself). The most promising avenue to explore is your speed coming off Malmedy at the head of the Masta straight. Anything you can gain here will not only carry extra speed all the way down the straight, it may also add a few mph at the far end. And, obviously, the later you can delay your braking--and the less you have to brake--will also squeeze out a few more rpm. (Achim Trensz is currently the record holder of my informal Vmin contest through the kink: he's seen 176 mph...about 20 mph better than my best!)

Beyond that, there's not much more that your setup can add. You can fiddle with the gearing; trying incremental changes in both directions (the Ferrari--uncharacteristically--seems to develop more torque than horsepower, so I'm inclined to go taller). If you can't find the perfect ratio with, say, a 9/31 ring & pinion, you can swap in an 8/31 or a 10/31 and adjust G5. You can reduce the rolling resistance with higher tire pressures (which may reduce overall grip) and set the toe to zero, front and rear (which will almost certainly give you more oversteer). I don't think Papy modeled the aerodynamic resistance of wind passing under the car or I'd suggest a Lo-Rider setup...but you never know. OTOH, I'm pretty sure they modeled the drivetrain's internal friction, so you might see some minuscule improvement by reducing the slippage in the differential (say, ramp angles of 30/30 with 5 clutches), but, no, I won't take that puppy out for a test drive.

Maybe nitrous? Hydrazine?

--[Steve Smith](#)

Erata

Taruffi's Book

Jeffrey Hunsberger writes:

"When I read in the back of Four Wheel Drift that "The Technique of Motor Racing" was out of print, a red flag went up for me. I had purchased the book recently from a Border's Book Store. It is published by [Robert Bentley, Inc.](#) Automotive Publishers.

"You can even [order the book online!](#)"

Who Said "Less is More"?

A reader wrote: "As you (or was it Nietzsche?) noted, however, whatever makes you faster is also harder."

That would be "Fast Freddie" Nietzsche.

--Zarathustra

Rising Temperatures

I'm sorry I didn't address this sooner: In "Four-Wheel Drift" (the strategy guide), I said that the proper operating range of the tires was "very roughly," 110 to 180 degrees. This guesstimate was based on early builds, before the correct physics models were in place...and it was flat-out wrong. As is now embarrassingly apparent, the appropriate range is more like 160 to 230 degrees. That is, until you get the tires warmed up to the lower figure, the tires will feel slippery. Basically, you do this by driving like hell for a lap or so, deliberately spinning the wheels, locking the brakes, and sliding the car around. (Spa's long downhill sweeper at Burnenville, early in the lap, will put plenty of heat in the tires, as will the first dozen or two turns at the Ring...if you survive!) On TV, you see drivers zig-zagging their cars on the "formation" (nee pace) lap, but I have it on good(year) authority that this accomplishes very little. (In the game, it will likely whip-saw you into a terminal spin.)

If you continue to drive like a maniac, however, you may overheat the tires, whereupon they revert to feeling greasy. This happens about the time you start to see "flash" readings of 240 deg. or more. You can take a "snapshot" of your tires' temps at any point on the track by hitting the Esc key, and returning to the pits for a look-see at the setup page (exiting the Curvas Grande or Ascari at Monza, for example), but the most common reference point is at the S/F (start/finish) line. Even at a track like Kyalami or Zandvoort, where the S/F line is a long ways from the last corner, the tires will retain enough heat to give you a valid reading.

Although how hard you're driving is the most influential factor affecting the temps, other things do have an effect. Stiffer suspension settings, lower tire pressures, more toe (-out or -in at the front; -in at the rear), a heavier fuel load, less power-side lock in the differential, a greater number or severity of turns, even taller ride heights will all tend to increase the temps. Banked turns (like those at Mexico and the Glen) will tend to reduce the temps (less "hysteresis," or squirm). But basically, if you're not getting at least 160 deg. at the front end (which almost invariably runs cooler) and 180 deg. at the rear, you're not driving hard enough. On average, my setups give me about 165-175 at the front, and 205-215 at the rear. The Novice and Advanced Trainers are the exception: they run much cooler. (I suspect Papy didn't model smaller tires; only less weight and horsepower.)

--[Steve Smith](#)