FIA F4

USER MANUAL

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DEAR iRACING USER,

Congratulations on your purchase of the fia f4! From all of us at iRacing, we appreciate your support and your commitment to our product. We aim to deliver the ultimate sim racing experience, and we hope that you'll find plenty of excitement with us behind the wheel of your new car!

The iRacing Formula fia f4 has been developed in conjunction with the global effort to massively increase the participation of motorsport worldwide. Following the introduction of a second-generation entry-level open-wheel formula in 2022, the iRacing Formula fia f4 benefits from the same level of analysis, detail, data, and testing as our members have come to expect while the genericized model allows for use by national clubs world-over without manufacturer conflicts. iRacers have their choice of the GT2 and GT3 versions of the Ford GT.

The following guide explains how to get the most out of your new car, from how to adjust its settings off of the track to what you'll see inside of the cockpit while driving. We hope that you'll find it useful in getting up to speed.

Thanks again for your purchase, and we'll see you on the track!

CHASSIS

DOUBLE WISHBONE PUSHROD SUSPENSION
FRONT AND REAR

LENGTH	WIDTH	WHEELBASE	DRY WEIGHT	WET WEIGHT WITH DRIVER
4467mm	**1738mm**	**2745mm**	**581kg**	**665kg**
175.9in	68.4in	108.1in	1281lbs	1466lbs

POWER UNIT

INLINE-4

DISPLACEMENT	TORQUE	POWER	RPM LIMIT
2.0Liters	**226Nm**	**178bhp**	**7275RPM**
122.0CID	167lb-ft	131kW	

Introduction

The information found in this guide is intended to provide a deeper understanding of the chassis setup adjustments available in the garage, so that you may use the garage to tune the chassis setup to your preference.

Before diving into chassis adjustments, though, it is best to become familiar with the car and track. To that end, we have provided baseline setups for each track commonly raced by these cars. To access the baseline setups, simply open the Garage, click iRacing Setups, and select the appropriate setup for your track of choice. If you are driving a track for which a dedicated baseline setup is not included, you may select a setup for a similar track to use as your baseline. After you have selected an appropriate setup, get on track and focus on making smooth and consistent laps, identifying the proper racing line and experiencing tire wear and handling trends over a number of laps.

Once you are confident that you are nearing your driving potential with the included baseline setups, read on to begin tuning the car to your handling preferences.

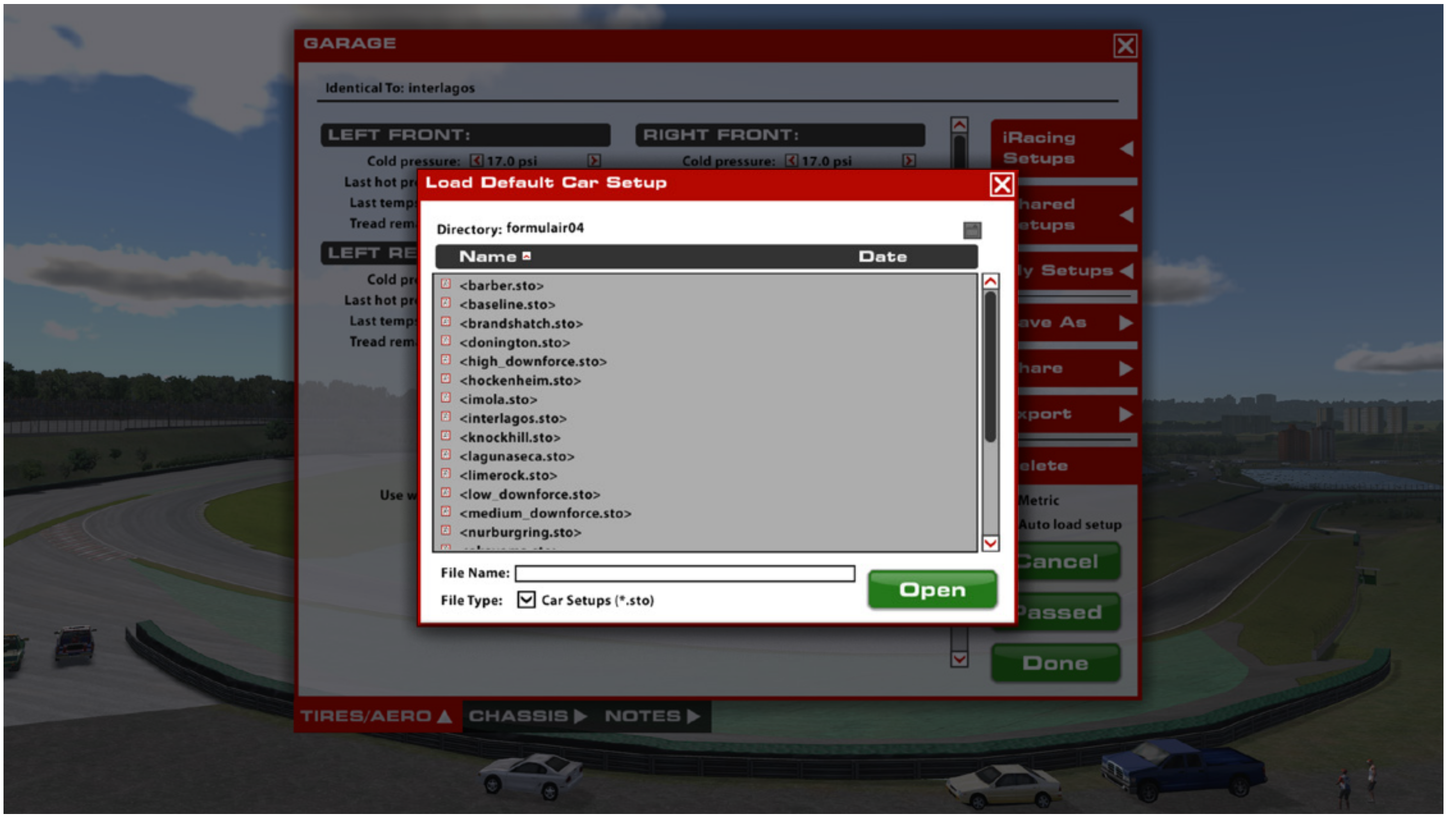
GETTING STARTED

Before starting the car, it is recommended to map a control for Brake Bias adjustment. While this is not mandatory, this will allow you to make quick changes to the brake bias to suit your driving while out on track.

Once you load into the car, getting started is as easy as pulling the "upshift" paddle to put it into gear, and hitting the accelerator pedal. This car uses an automated sequential transmission and does not require manual clutch operation to shift in either direction.

Upshifting is recommended when the shift lights on the dashboard are all fully illuminated. This is at 7000rpm.

LOADING AN iRACING SETUP



Upon loading into a session, the car will automatically load the iRacing Baseline setup [baseline.sto]. If you would prefer one of iRacing's pre-built setups that suit various conditions, you may load it by clicking Garage > iRacing Setups > and then selecting the setup to suit your needs.

If you would like to customize the setup, simply make the changes in the garage that you would like to update and click apply. If you would like to save your setup for future use click "Save As" on the right to name and save the changes.

To access all of your personally saved setups, click "My Setups" on the right side of the garage.

If you would like to share a setup with another driver or everyone in a session, you can select "Share" on the right side of the garage to do so.

If a driver is trying to share a setup with you, you will find it under "Shared Setups" on the right side of the garage as well.

Dash Pages

The dash display in this car is non-adjustable and features a single page to display critical vehicle information.

DASH CONFIGURATION

Row 1 Left	Engine oil pressure (Bar or psi)
Row 1 Center	Engine rpm
Row 1 Right	Engine water temperature (Celsius or Fahrenheit)
Row 2 Left	Engine oil temperature (Celsius or Fahrenheit)
Row 2 Center	Currently selected gear
Row 2 Right	Road speed (km/h or mph)
Row 3 Left	Session best lap as mm:ss:ms
Row 3 Right	Session last lap as mm:ss:ms

PIT LIMITER

1 Green	6300 RPM
2 Green	6500 RPM
3 Green	6600 RPM
4 Green	6700 RPM
1 Red	6800 RPM
2 Red	6900 RPM
All Flashing	7000 RPM

When the pit limiter is activated a large green box will appear at the base of the dash display.

SHIFT LIGHTS

1 Green	6300 rpm
2 Green	6500 rpm
3 Green	6600 rpm
4 Green	6700 rpm
1 Red	6800 rpm
2 Red	6900 rpm
All Flashing	7000 rpm

HALO CENTER PILLAR

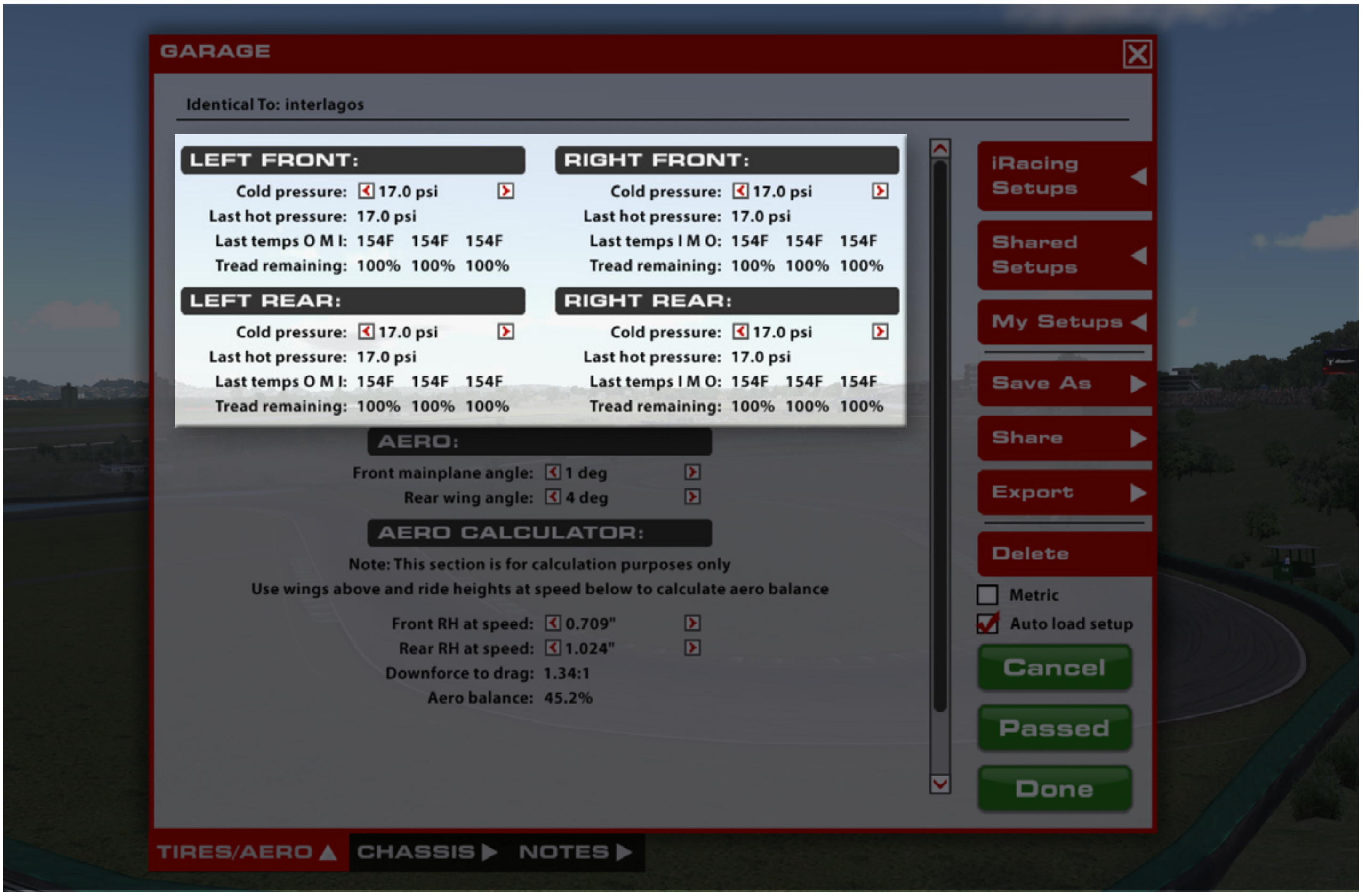
To improve driver visibility, the rock screen can be removed via the "Hide Obstructions" setting in the Options menu. To enable this option go to the Options and then Graphics menu, then change the "Hide Obstructions" setting to either "Cockpit halo" or "All". This will remove the screen completely but it will still be visible in replays.

Advanced Setup Options

This section is aimed toward more advanced users who want to dive deeper into the different aspects of the vehicle's setup. Making adjustments to the following parameters is not required and can lead to significant changes in the way a vehicle handles. It is recommended that any adjustments are made in an incremental fashion and only singular variables are adjusted before testing changes.

Tires & Aero

TIRE SETTINGS (ALL FOUR)



COLD AIR PRESSURE

Air pressure in the tire when the car is loaded into the world. Higher pressures will reduce rolling drag and heat buildup, but will decrease grip. Lower pressures will increase rolling drag and heat buildup, but will increase grip. Higher speeds and loads require higher pressures, while lower speeds and loads will see better performance from lower pressures. Cold pressures should be set to track characteristics for optimum performance. Generally speaking, it is advisable to start at lower pressures and work your way upwards as required.

HOT AIR PRESSURE

Air pressure in the tire after the car has returned to the pits. The difference between cold and hot pressures can be used to identify how the car is progressing through a run in terms of balance, with heavier-loaded tires seeing a larger difference between cold and hot pressures. Ideally, tires that are worked in a similar way should build pressure at the same rate to prevent a change in handling balance over the life of the tire, so cold pressures should be adjusted to ensure that similar tires are at similar pressures once up to operating temperature. Hot pressures should be analyzed once the tires have stabilized after a period of laps. As the number of laps per run will vary depending upon track length a good starting point is approximately 50% of a full fuel run.

TIRE TEMPERATURES

Tire carcass temperatures, measured via Pyrometer, once the car has returned to the pits. Wheel Loads and the amount of work a tire is doing on-track are reflected in the tire's temperature, and these values can be used to analyze the car's handling balance. Center temperatures are useful for directly comparing the work done by each tire, while the Inner and Outer temperatures are useful for analyzing the wheel alignment (predominantly camber) while on track. These values are measured in three zones across the tread of the tire. Inside, Middle and Outer.

TREAD REMAINING

The amount of tread remaining on the tire once the car has returned to the pits. Tire wear is very helpful in identifying any possible issues with alignment, such as one side of the tire wearing excessively, and can be used in conjunction with tire temperatures to analyze the car's handling balance. These values are measured in the same zones as those of temperature.

AERO

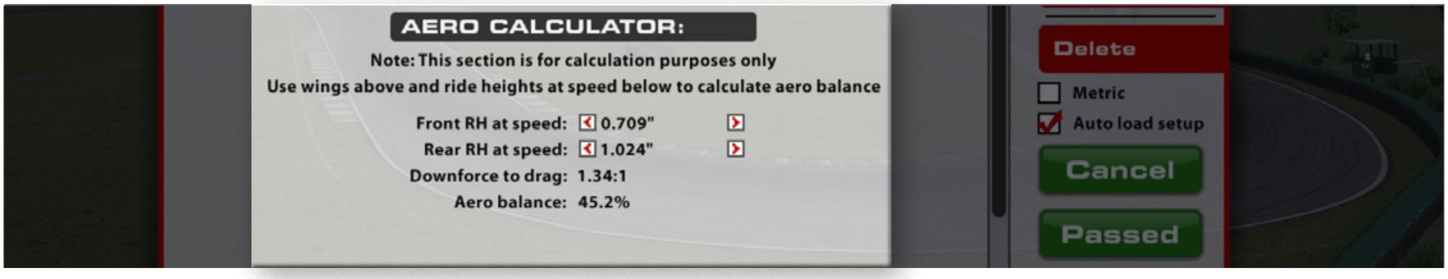
FRONT MAINPLANE ANGLE

The relative angle of attack of the front wing. This is a powerful aerodynamic device in terms of balance and total downforce produced. Increasing the front mainplane angle results in more total cornering capability in medium to high speed corners, a significant shift forwards in handling balance (more oversteer) and a slight reduction in straight line speed. The front mainplane angle should be adjusted in conjunction with the rear wing angle as well as the relative difference in front and rear ride heights known as 'rake'. Reducing the rake will shift the aerodynamic balance rearwards while increasing it will shift the aerodynamic balance forwards.

REAR WING SETTING

The relative angle of attack of the rear wing. On this car the primary purpose of the rear wing is to trim the aerodynamic balance to suit changes made to the front mainplane angle. Increasing the rear wing angle will produce more downforce, more drag and shift the aerodynamic balance rearwards (more understeer). In both balance and downforce senses it is relatively less powerful than the front mainplane and will require larger step changes to suit any changes made to the front mainplane. However, it is relatively more influential in terms of drag. As such, at tracks with long straights it may be beneficial to focus on reducing the rear wing angle for greater straight line speed to aid in overtaking.

AERO CALCULATOR



The Aero Calculator is a tool provided to aid in understanding the shift in aerodynamic balance associated with adjustment of the rear wing setting and front and rear ride heights. It is important to note that the values for front and rear ride height displayed here DO NOT result in any mechanical changes to the car itself, however, changes to the rear wing angle here WILL be applied to the car. This calculator is a reference tool ONLY.

REAR RH AT SPEED

The Ride Height (RH) at Speed is used to give the Aero Calculator heights to reference for aerodynamic calculations. When using the aero calculator, determine the car's Rear Ride height via telemetry at any point on track and input that value into the "Front RH at Speed" setting. It is advisable to use an average value of the LR and RR ride heights as this will provide a more accurate representation of the current aero platform rather than using a single corner height.

DOWNFORCE TO DRAG

In absolute terms this number represents the amount of downforce produced per unit drag and thus represents the overall aerodynamic efficiency of the currently selected wing configuration and at speed ride heights. This can be useful in evaluating various combinations of wings and rake while keeping an equivalent downforce to drag number. However, it should be noted that this number only represents the efficiency, not the total downforce produced. As such, it is very possible to create two different packages that have the same efficiency but very differing levels of performance in terms of mid corner and end of straightaway speeds.

FRONT DOWNFORCE

This value displays the proportion of downforce acting at the front axle for the given wing and ride height combination set within the calculator parameters. This value is an instantaneous representation of your aero balance at this exact set of parameters and it can be helpful to pick multiple points around a corner or section of track to understand how the aerodynamic balance is moving in differing situations such as braking, steady state cornering and accelerating at corner exit. A higher forwards percentage will result in more oversteer in mid to high speed corners.

Chassis

FRONT

TRANSPARENT HALO COLUMN

This option is visual only. Checking this box will change the center support of the halo from opaque to transparent.

PUSHROD OFFSET

Used to adjust the front ride height by increasing or decreasing the length of the front pushrods. Lengthening the pushrod will increase the ride height and shortening the pushrod will reduce the ride height. Left and right adjustments are paired and adjusted as one.

ARB BLADES

The configuration of the Anti-Roll Bar arms, or "blades", can be changed to alter the overall stiffness of the ARB assembly. Increasing the number of ARB arms will increase the roll stiffness of the front suspension, resulting in less body roll but increasing mechanical understeer. This can also, in some cases, lead to a more responsive steering feel from the driver. Conversely, reducing the number of ARB arms will soften the suspension in roll, increasing body roll but decreasing mechanical understeer. This can result in a less-responsive feel from the steering, but grip across the front axle will increase. Along with this, the effects of softening or stiffening the ARB assembly in relation to aerodynamics should also be considered, softer ARB assemblies will result in more body roll which will decrease control of the aero platform in high speed corners and potentially lead to a loss in aero efficiency. 5 configurations of ARB arms are available and range from 1 (softest) to 5 (stiffest).

DAMPER COMPRESSION STIFFNESS

The bump stiffness setting is a paired adjustment controlling both the low and high speed compression damping characteristics of the damper. In this case 1 is minimum damping (least resistance to compression) while 10 is maximum damping (most resistance to compression). Increasing the bump stiffness will result in a faster transfer of weight to this end of the car during transient movements such as braking and direction change with increased damping usually providing an increase in turn-in response but a reduction in overall grip in the context of front damping. High speed compression damping will increase proportionally to the increase in low speed compression damping which will also result in harsher response to kerb strikes. At smoother tracks more bump stiffness will typically increase performance while at rougher tracks or ones with aggressive kerbs less compression damping can result in an increase in mechanical grip at the expense of platform control.

DAMPER REBOUND STIFFNESS

The Rebound Stiffness setting is a paired adjustment to both low and high speed rebound damping characteristics. Increasing rebound damping will slow down the rate at which the damper extends in both low and high speed situations. A typical low damper speed situation would be as the car rolls back to level on a corner exit while a high speed situation would be where the suspension is extending after large kerb contact. 1 is minimum damping (least resistance to extension) while 10 is maximum damping (most resistance to extension). While high rebound stiffness will result in improved platform control for aerodynamic performance and overall chassis response it is important to avoid situations where the damper is too slow in rebounding as this will result in the tire losing complete contact with the track surface which can induce or exacerbate severe oscillations.

BRAKE PRESSURE BIAS

Brake Bias is the percentage of braking force that is being sent to the front brakes. Values above 50% result in greater pressure in the front brake line relative to the rear brake line which will shift the brake balance forwards increasing the tendency to lock up the front tyres but potentially increasing overall stability in braking zones. This should be tuned for both driver preference and track conditions to get the optimum braking performance for a given situation.

CROSS WEIGHT

The percentage of total vehicle weight in the garage acting across the right front and left rear corners. 50.0% is generally optimal for non-oval tracks as this will produce symmetrical handling in both left and right hand corners providing all other chassis settings are symmetrical. Higher than 50% cross weight will result in more understeer in left hand corners and increased oversteer in right hand corners, adjustments to cross weight can be made by making changes to the corner spring rates, air pressures or alignment at each corner of the car.

LEFT/RIGHT FRONT

CORNER WEIGHT

The weight underneath each tire under static conditions in the garage. Correct weight arrangement around the car is crucial for optimizing a car for a given track and conditions. For the fia f4 this cannot be easily influenced as individual corner pushrods are non-adjustable. However, when running asymmetrical setups some difference in corner weights may still be observed.

RIDE HEIGHT

Distance from ground to a reference point on the chassis. Since these values are measured to a specific reference point on the car, these values may not necessarily reflect the vehicle's ground clearance, but instead provide a reliable value for the height of the car off of the race track at static values. Adjusting Ride Heights is key for optimum performance, as they can directly influence the vehicle's aerodynamic performance as well as mechanical grip. Increasing front ride height will decrease front downforce as well as decrease overall downforce, but will allow for more weight transfer across the front axle when cornering. Conversely, reducing ride height will increase front and overall downforce, but reduce the weight transfer across the front axle. Minimum legal front ride height is 20.0 mm.

SPRING RATE

This setting determines the installed corner spring stiffness. Stiffer springs will result in a smaller variance in ride height between high and low load cases and will produce superior aerodynamic performance through improved platform control; however, they will also result in increased tire load variation which will manifest as a loss in mechanical grip. Typically the drawbacks of stiffer springs will become more pronounced on rougher tracks and softer springs in these situations will result in increased overall performance. Corner spring changes will influence both roll and pitch control of the platform and ARB changes should be considered when altering corner spring stiffnesses in order to retain the same front to rear roll stiffness and overall balance. When reducing corner spring stiffness the ARB stiffness should be increased to retain the same roll stiffness as previously. Six options for spring rate are available ranging from 88 N/mm (500 lbs/in) to 175 N/mm (1000 lbs/in). Pushrod offsets must be adjusted to return the car to the prior static ride heights after any spring rate change.

CASTER

Caster is the vertical angle of the steering axis relative to the side view of the chassis. Positive caster angle is where the steering axis is leaned rearwards from this viewpoint, the more caster the larger the total trail of the contact patch behind the steering axis. More caster angle will result in the mechanical trail being a larger proportion of the felt steering weight relative to the tires pneumatic trail. This will result in a heavier overall steering feel but a possible loss in felt feedback from the tire. Increasing caster angle will also have secondary effects such as an increase in dynamic camber when turning the wheel through large steering angles which can be beneficial in chicances or hairpins. As well as this the more caster angle the greater the jacking effect during cornering which will result in lifting the inside front wheel while lowering the outside front wheel. This jacking effect will also result in the unloading and potentially lifting of the inside rear wheel which can aid in rotation around tight corners.

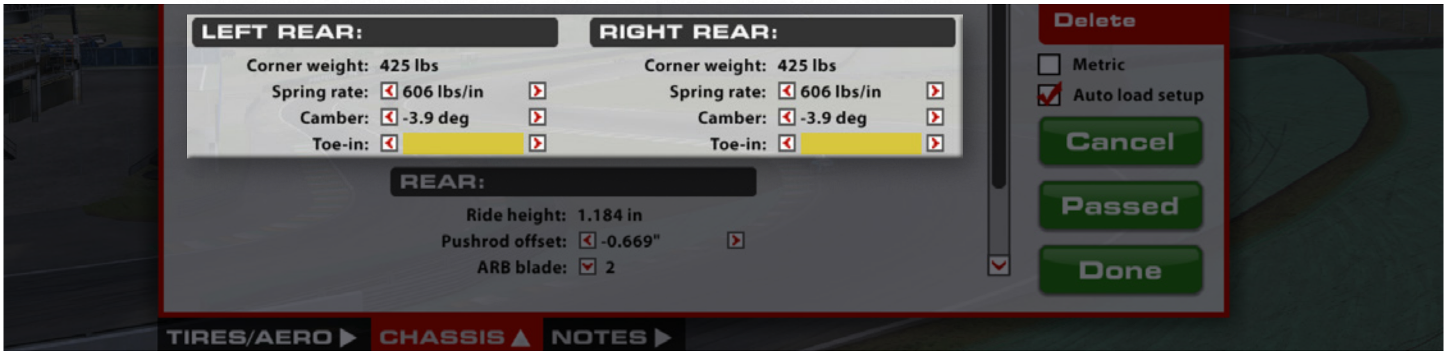
CAMBER

Camber is the vertical angle of the wheel relative to the center of the chassis. Negative camber is when the top of the wheel is closer to the chassis centerline than the bottom of the wheel, positive camber is when the top of the tire is farther out than the bottom. Due to suspension geometry and corner loads, negative camber is desired on all four wheels. Higher negative camber values will increase the cornering force generated by the tire, but will reduce the amount of longitudinal grip the tire will have under braking. Excessive camber values can produce very high cornering forces but will also significantly reduce tire life, so it is important to find a balance between life and performance. Increasing front camber values will typically result in increased front axle grip during mid to high speed cornering but will result in a loss of braking performance and necessitate a rearward shift in brake bias to compensate.

TOE-IN

Toe is the angle of the wheel, looking from vertical, relative to the chassis centerline. Toe-in is when the front of the wheels are closer to the centerline while Toe-out is when the front of the wheels are farther from the centerline than the rear of the tires. On the front end, Toe will alter how quickly the tires respond to steering inputs and influence how stable the car is in a straight line. Toe-out settings (negative garage value) will increase turn-in response and make the car less stable in a straight line, while Toe-in (positive garage value) will increase straight-line stability while making initial steering response more sluggish.

LEFT/RIGHT REAR



SPRING RATE

Similar to at the front axle, stiffer springs will result in a smaller variance in ride height between high and low load cases and will produce superior aerodynamic performance through improved platform control at the expense of mechanical grip. This can be particularly prominent when exiting slow speed corners with aggressive throttle application. Stiffer springs will tend to react poorly during these instances especially so on rough tracks which will result in significant traction loss. Spring stiffness should be matched to the needs of the racetrack and set such that the handling balance is consistent between high and low speed cornering. As an example case, a car which suffers from high speed understeer but low speed oversteer could benefit from an increase in rear spring stiffness. This will allow for a lower static rear height which will reduce rear weight transfer during slow speed cornering while maintaining or even increasing the rear ride height in high speed cornering to shift the aerodynamic balance forwards and reduce understeer. Six options for spring rate are available 88 N/mm (500 lbs/in) to 175 N/mm (1000 lbs/in). Pushrod offsets must be adjusted to return the car to the prior static ride heights after any spring rate change.

CAMBER

As at the front of the car it is desirable to run significant amounts of negative camber in order to increase the lateral grip capability; however, it is typical to run slightly reduced rear camber relative to the front. This is primarily for two reasons, firstly, the rear tires are wider compared to the fronts and secondly the rear tires must also perform the duty of driving the car forwards where benefits of camber to lateral grip become a tradeoff against reduced longitudinal (traction) performance.

TOE-IN

At the rear of the car it is typical to run toe-in. Increases in toe-in will result in improved straight line stability and a reduction in response during direction changes. Large values of toe-in should be avoided if possible as this will increase rolling drag and reduce straight line speeds. Generally, it is advised to keep the left and right toe values equal to prevent crabbing or asymmetric handling behavior; however, heavily asymmetric tracks such as Lime Rock Park may see a benefit in performance from running asymmetric configurations of rear toe and other setup parameters.

REAR

REAR RIDE HEIGHT

Distance from ground to a reference point on the rear of the chassis. Increasing rear ride height will decrease rear downforce as well as increase overall downforce and will allow for more weight transfer across the rear axle when cornering. Conversely, reducing ride height will increase rear downforce percentage but reduce overall downforce while reducing the weight transfer across the rear axle. Rear ride height is a critical tuning component for both mechanical and aerodynamic balance considerations and static rear ride heights should be considered and matched to the chosen rear corner springs for optimal performance. Minimum legal rear ride height is 30.0 mm while maximum legal rear ride height is 40.0 mm.

PUSHROD OFFSET

Used to adjust the rear ride height by increasing or decreasing the length of the rear pushrods. Lengthening the pushrod will increase the ride height and shortening the pushrod will reduce the ride height. Left and right adjustments are paired and adjusted as one.

ARB BLADES

The configuration of the Anti-Roll Bar arms, or “blades”, can be changed to alter the overall stiffness of the ARB assembly. Increasing the ARB assembly stiffness will increase the roll stiffness of the rear suspension, resulting in less body roll but increasing mechanical oversteer. This can also cause the car to “take a set” more quickly at initial turn-in. Conversely, reducing the ARB assembly stiffness will soften the suspension in roll, increasing body roll but decreasing mechanical oversteer. This can result in a less-responsive feel from the rear especially in transient movements, but grip across the rear axle will increase. 5 configurations of ARB arms are available and range from 1 (softest) to 5 (stiffest).

DAMPER COMPRESSION STIFFNESS

The bump stiffness setting is a paired adjustment controlling both the low and high speed compression damping characteristics of the damper with identical ranges to those of the front dampers. Increasing the compression damping will result in a faster transfer of weight to this end of the car during transient movements such as accelerating and direction change with increased damping usually providing an increase in response but a reduction in overall grip especially at corner exit traction in the context of rear dampers. Excessively stiff compression damping can cause very poor traction on rough tracks as it can result in large tire load variation and a reduction in overall grip.

DAMPER REBOUND STIFFNESS

The rebound stiffness setting is a paired adjustment controlling both the low and high speed damping characteristics of the damper with identical ranges to those of the front dampers. Increasing rebound damping will slow down the rate at which the damper extends in both low and high speed situations. As at the front, high rebound stiffness will result in improved platform control for aerodynamic performance and overall chassis response but it is important to avoid situations where the damper is too slow in rebounding as this will result in the tire losing complete contact with the track surface. This can be particularly detrimental during braking events and during the initial turn-in phase though an increase in rebound stiffness can help to 'slow down' the change in pitch of the car as the brakes are applied, potentially increasing braking stability.

FUEL LEVEL

The amount of fuel in the fuel tank. Tank capacity is 40 L (10.6 g). Adjustable in 1 L (0.26 g) increments.