USER MANUAL
FIA CROSS CAR

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DEAR iRACING USER,

Congratulations on your iRacing membership, and we hope you enjoy the FIA Cross Car. 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 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

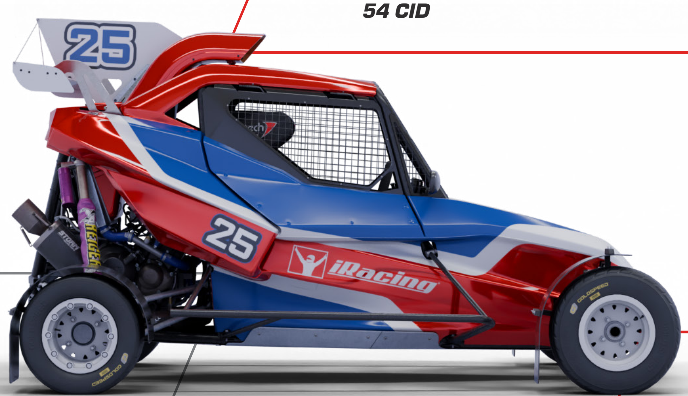
SLA, COILOVER SHOCKS

LENGTH	WIDTH	WHEELBASE	DRY WEIGHT	WET WEIGHT WITH DRIVER
2550 mm 100 in	**2080 mm** 82 in	**2000 mm** 79 in	**340 kg** 750 lbs	**435 kg** 959 lbs

POWER UNIT

YAMAHA MT-09 890CC 3-CYLINDER

DISPLACEMENT	RPM LIMIT	TORQUE	POWER
.89 Liters 54 CID	**12,165 RPM**	**68.6 lb-ft** 93 Nm	**120 bhp** 89 kW



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.

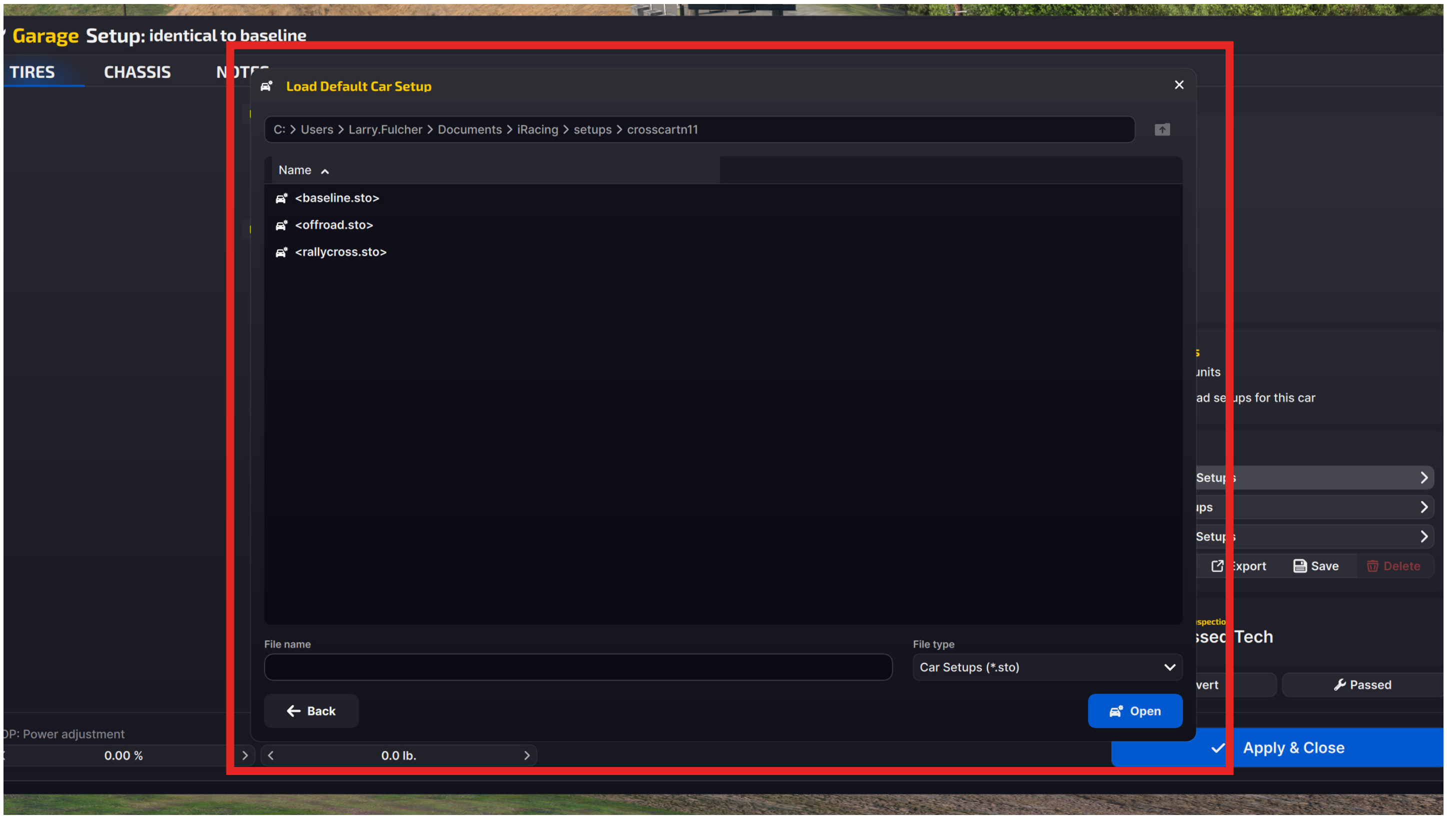
After you have selected an appropriate setup, get on track and focus on making smooth and consistent laps, identifying the proper racing line and experiencing tire wear and handling trends over a number of laps.

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

Once you load into the car, select 1st gear. Slowly release the clutch while applying the throttle to drive away. A clutch is necessary when coming to a stop to prevent stalling the engine and shifting into reverse if necessary, but the clutch isn't required once the vehicle is in motion for upshifts or downshifts. Upshifting can be done without lifting off the throttle, however downshifting will require a small throttle blip to unload the transmission. If you downshift too early, or don't blip the throttle sufficiently, the wheel speed and engine speed will be mismatched, leading to wheel hop at the rear and a possible spin.

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 CONFIGURATION

The FIA Cross Car features an AIM MXm digital dash display. This display features two pages, multiple backlight colors, and built-in shift lights in one simple module.

PAGE 1 DASH CONFIGURATION

Tachometer/RPM - A bar-type tachometer at the top of the display shows the current engine RPM as well as a numerical RPM display in the upper left.

GAS % - The upper-right number displays the current throttle pedal position in percent

WTS F/C - Current engine cooling fluid temperature, in °F or °C depending on the selected garage units, shown in the lower left

Best - Current session best lap time is shown in the lower right

PAGE 2 DASH CONFIGURATION

WTS F/C - Current engine cooling fluid temperature, in °F or °C depending on the selected garage units, is shown in the upper left

RPM - Engine RPM is shown in the upper right

Best - Session best lap time is shown in the lower left

GAS % - The lower-right number displays the current throttle pedal position in percent

GEAR - The currently-selected gear

SHIFT LIGHTS

Above the digital display is a set of five LEDs that will illuminate from left to right as engine RPM increases. Upshifting is recommended as soon as all five lights are illuminated.

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

TIRE DATA

COLD PRESSURE / STARTING PRESSURE

The air pressure in the tires when the car is loaded into the world. Lower pressures will provide more grip but will produce more rolling drag and build temperature faster. Higher pressures will feel slightly more responsive and produce less rolling drag, but can result in less grip. Generally, higher pressures are preferred at tracks where speeds are higher while lower pressures work better at slower tracks where mechanical grip is important.

LAST HOT PRESSURE

When the car returns to the garage after an on-track stint, the tire pressure will be displayed as Hot Pressure. The difference between cold and hot pressure is a good way to see how tires are being loaded and worked while on track. Tires seeing more work will build more pressure, and paying attention to which tires are building more pressure and adjusting cold pressure to compensate can be crucial for optimizing tire performance.

LAST TEMPERATURES

The tire carcass temperatures (measured within the tread) are displayed after the car returns from the track. These temperatures are an effective way to determine how much work or load a given tire is experiencing while on track. Differences between the inner and outer temperatures can be used to tune individual wheel alignment and the center temperatures can be compared to the outer temperatures to help tune tire pressure.

TREAD REMAINING

The amount of tread on the tire, displayed as a percentage of a new tire, is shown below the tire temperatures. These values are good for determining how far a set of tires can go before needing to be replaced, but don't necessarily indicate an under- or over-worked tire in the same way temperatures will.

CHASSIS

FRONT

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.

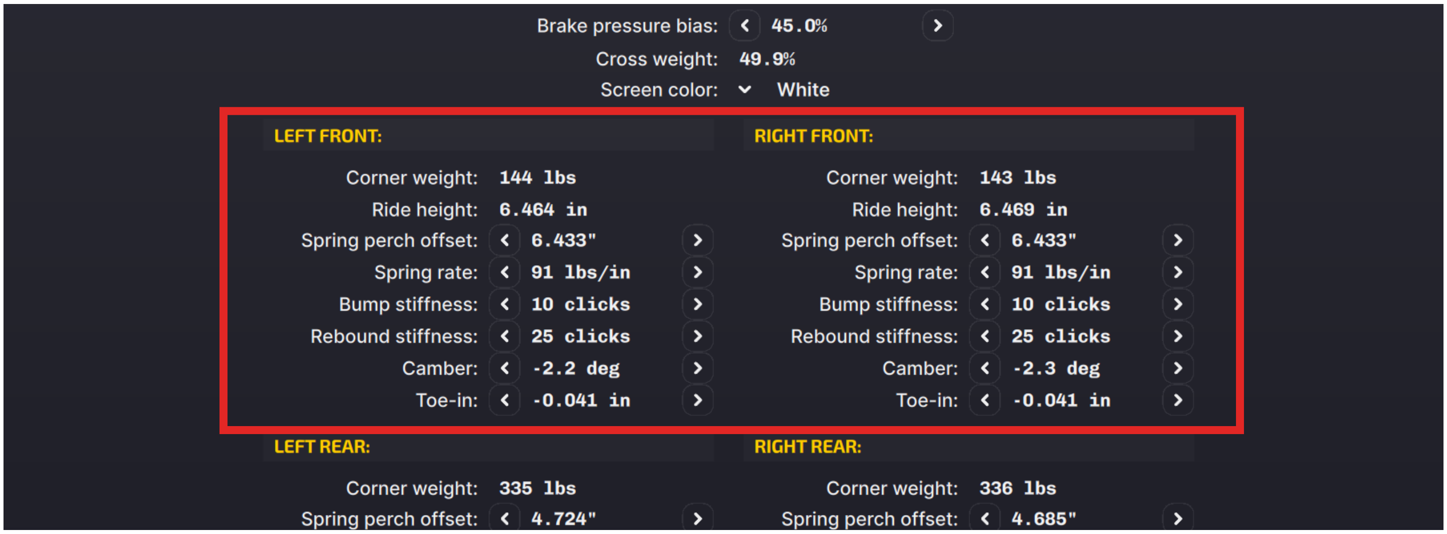
CROSS WEIGHT

The percentage of total vehicle weight in the garage acting across the right front and left rear corners. A setting of 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. Cross weight can be adjusted by making changes to the spring perch offsets at each corner of the car.

SCREEN COLOR

Changes the back-light color for the digital dash display, with no effect on vehicle performance. This can also be changed while driving via the F8 black box.

FRONT CORNERS



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. Individual wheel weight adjustments and crossweight adjustments are made via the spring perch offset adjustments at each corner.

RIDE HEIGHT

Distance from the ground to the bottom of the car on the front wheel centerline. Adjusting Ride Heights is key for optimum performance, as well as influencing how well the car handles large bumps or jumps. Increasing front ride height can increase front mechanical grip by producing more weight transfer when cornering, but can feel less responsive in some cases. Conversely, reducing ride height will reduce the weight transfer across the front axle, but could feel more responsive when turning into a corner.

SPRING PERCH OFFSET

Used to adjust the ride height at the corner of the car by changing the installed position of the spring. Increasing the spring perch offset will result in lowering the corner of the car while reducing the spring perch offset will raise the corner of the car. These changes should be kept symmetrical across the axle (left to right) to ensure the same corner ride heights and no change in cross weight. The spring perch offsets can also be used in diagonal pairs (LF to RR and RF to LR) to change the static cross weight in the car.

SPRING RATE

This setting determines the installed corner spring stiffness. Stiffer springs will result in a smaller variance in ride height but can greatly reduce mechanical grip, but can prevent the car from bottoming out over large jumps. Softer springs will increase mechanical grip and help the suspension absorb bumps better, but may not prevent the chassis from hitting the ground over large jumps.

BUMP STIFFNESS

The bump stiffness setting changes how resistant the shocks are to compression. Setting “15” is minimum damping (least resistance to compression) while “1” is maximum damping (most resistance to compression). Increasing the bump stiffness will result in faster weight transfer to the wheel 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 dampers. Increased bump stiffness can also prevent the suspension from absorbing bumps, leading to a loss in grip.

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. Setting “37” is minimum damping (least resistance to extension) while “1” is maximum damping (most resistance to extension). While high rebound stiffness will result in improved platform control for better feel and steering response, it is important to avoid situations where the shock is too slow in rebounding as this will result in the tire losing complete contact with the track surface, especially after hard landings.

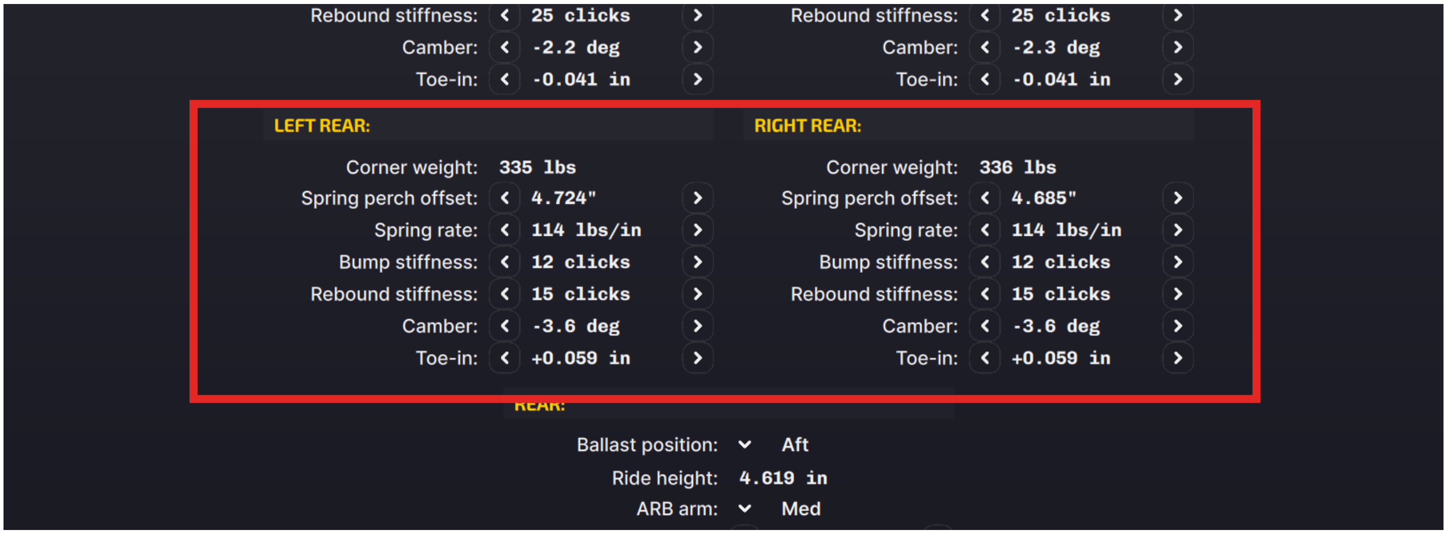
CAMBER

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 further 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 may result in frequent lockups under braking.

TOE-IN

Toe is the angle of the wheel, when viewed from above, relative to the centerline of the chassis. Toe-in is when the front of the wheel is closer to the centerline than the rear of the wheel, and Toe-out is the opposite. On the front end, adding toe-out (negative value) will increase slip in the inside tire and decrease straight-line stability while adding toe-in will reduce the slip and increase straight-line stability

REAR CORNERS



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. Individual wheel weight adjustments and crossweight adjustments are made via the spring perch offset adjustments at each corner.

SPRING PERCH OFFSET

Used to adjust the ride height at the corner of the car by changing the installed position of the spring. Increasing the spring perch offset will result in lowering the corner of the car while reducing the spring perch offset will raise the corner of the car. These changes should be kept symmetrical across the axle (left to right) to ensure the same corner ride heights and no change in cross weight. The spring perch offsets can also be used in diagonal pairs (LF to RR and RF to LR) to change the static cross weight in the car.

SPRING RATE

Similar to the front axle, stiffer springs will result in a smaller variance in ride height through various loads but can result in a loss of mechanical grip. Spring stiffness should be matched to the needs of the racetrack and set such that the handling balance is consistent but the chassis doesn't impact the ground too often.

BUMP STIFFNESS

The bump stiffness setting changes how resistant the shocks are to compression. Setting "15" is minimum damping (least resistance to compression) while "1" is maximum damping (most resistance to compression). Increasing the bump stiffness will result in faster weight transfer to the wheel 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 dampers. Increased bump stiffness can also prevent the suspension from absorbing bumps, leading to a loss in grip

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. Setting "37" is minimum damping (least resistance to extension) while "1" is maximum damping (most resistance to extension). While high rebound stiffness will result in improved platform control for better feel and steering response, it is important to avoid situations where the shock is too slow in rebounding as this will result in the tire losing complete contact with the track surface, especially after hard landings.

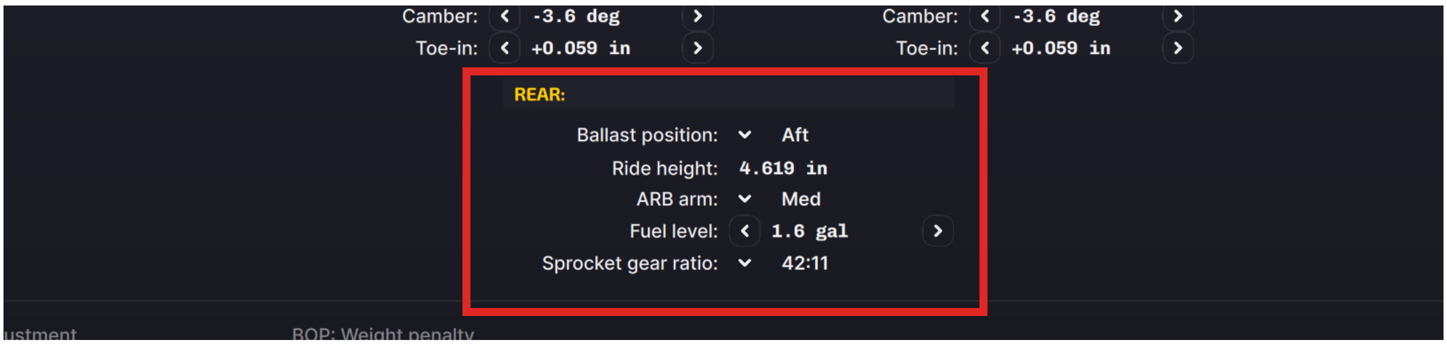
CAMBER

As with the front of the car it is desirable to run negative camber in order to increase the lateral grip capability when cornering. However, excessive rear camber can reduce the amount of forward traction the tires can produce so it's important to find a balance between cornering ability and traction.

TOE-IN

Toe is the angle of the wheel, when viewed from above, relative to the centerline of the chassis. Toe-in is when the front of the wheel is closer to the centerline than the rear of the wheel, and Toe-out is the opposite. 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.

REAR



BALLAST POSITION

The position of ballast weight can be moved to alter the car's handling characteristics. Shifting the ballast to a forward position will increase noseweight, leading to understeer in medium- and high-speed corners. More rearward positions will reduce noseweight and induce oversteer in corners.

RIDE HEIGHT

Distance from ground to a reference point on the rear of the chassis on the chassis's centerline. Increasing rear ride height will increase weight transfer across the rear axle and add rear grip while cornering, but can lead to a less responsive feeling for the driver. Reducing height will reduce weight transfer and induce oversteer but risks the chassis grounding out over jumps.

ARB ARM

The ARB Arms can be changed to further tune the suspension roll stiffness beyond only the ARB size setting. This option changes the length of the ARB blades to one of three settings as well as a fourth setting that disconnects the rear ARB entirely. Shorter blade settings will increase rear roll stiffness and induce oversteer while longer blade settings will reduce rear roll stiffness and reduce oversteer. Disconnecting the bar will greatly reduce rear roll stiffness and induce understeer.

FUEL LEVEL

The amount of fuel in the fuel tank when the car is loaded into the world.

SPROCKET GEAR RATIO

The sprocket ratio changes the final drive ratio at the rear axle, influencing acceleration and top speed. Smaller sprockets (lower number) will increase top speed and reduce acceleration, while larger sprockets (higher number) will increase acceleration at the expense of top speed.