



NORTHEAST DIRT MODIFIEDS

SMALL BLOCK 358

BIG BLOCK 467

USER MANUAL

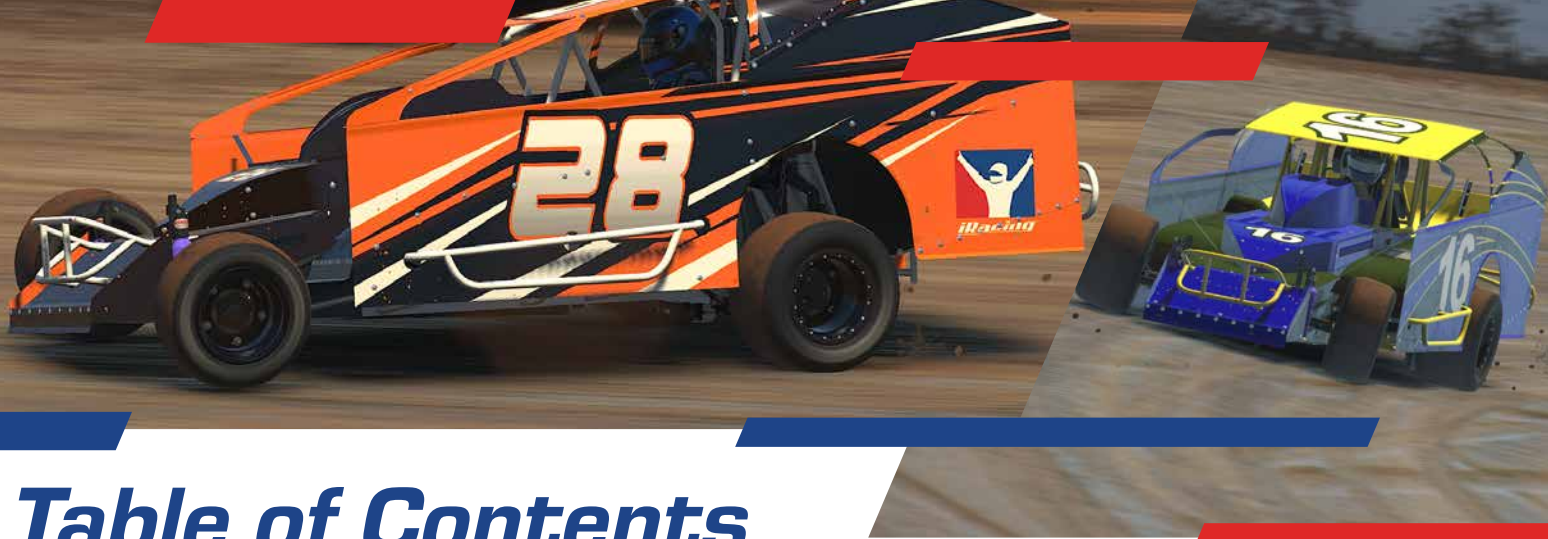


Table of Contents

CLICK TO VIEW A SECTION

GENERAL INFORMATION

<i>A Message From iRacing »</i>	4
<i>Tech Specs »</i>	5
<i>Introduction »</i>	6
Getting Started »	6
Loading An iRacing Setup »	7
<i>Dashboard »</i>	8
Gauges & Dials »	8
Rock Screen »	9

ADVANCED SETUP OPTIONS

<i>Tires »</i>	10
Tire Settings »	10
<i>Chassis »</i>	12
Front »	12
Front Corners »	13

Rear Corners »	15
Rear »	18



DEAR iRACING USER,

Congratulations on your purchase of the Big Block and 358 Modified! 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!

Incredibly popular throughout the northeastern United States, and with additional rounds as far south as Florida and north as Canada, dirt modifieds are just as fun to drive as they are to watch. Incredibly passionate fans pack the stands as these beasts go wheel-to-wheel in one of the most unique cars to hit the dirt bullrings of North America.

One of dirt oval racing's most beloved cars, the Super DIRTcar Series Big Block Modified produces a whopping 757 horsepower from its 467 CID naturally aspirated powerplant.

The smaller engine and slightly lower weight of the 358 Modified makes this car a more approachable version to begin your mastery of dirt modifieds; nonetheless, with 510 horsepower at your fingertips, it still isn't for the faint of heart. If you're new to the discipline, honing your skills with the 358 will help you step up to the premier Big Block Modified, and find the winner's circle more quickly.

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

FABRICATED STEEL TUBE,
CENTERED DRIVING POSITION



LIVE AXLE 4-LINK
FRONT WITH
COILOVERS
LIVE AXLE 3-LINK
REAR WITH
COILOVERS

LENGTH
4724mm
186in

WIDTH
2184mm
86in

WHEELBASE
2743mm
108in

358 WET
WEIGHT
716kg
2551lbs

BIG BLOCK
WET WEIGHT
716kg
2646lbs

POWER
UNIT

358 OR 467 CID NATURALLY ASPIRATED V8



SMALL BLOCK 358 MODIFIED

DISPLACEMENT	RPM LIMIT	TORQUE	POWER
358CID 5.8L	7800RPM	461lb-ft 626Nm	510bhp 378kW

BIG BLOCK 467 MODIFIED

DISPLACEMENT	RPM LIMIT	TORQUE	POWER
467CID 7.6L	8400RPM	646lb-ft 877Nm	757bhp 564kW



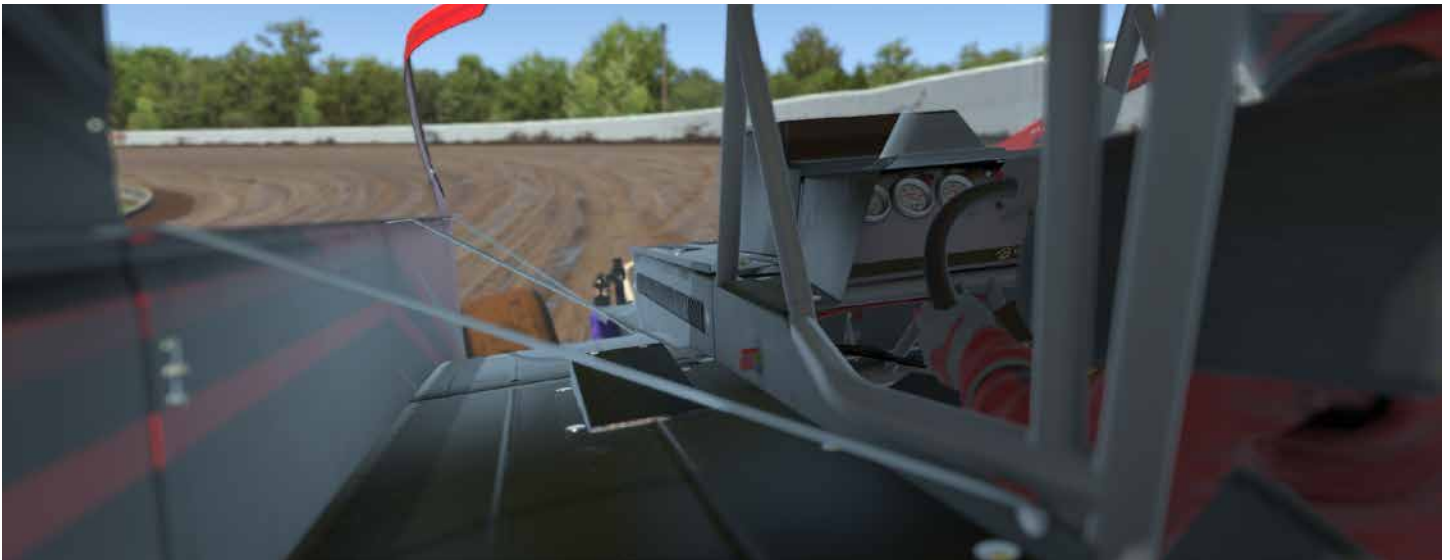
Introduction

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.

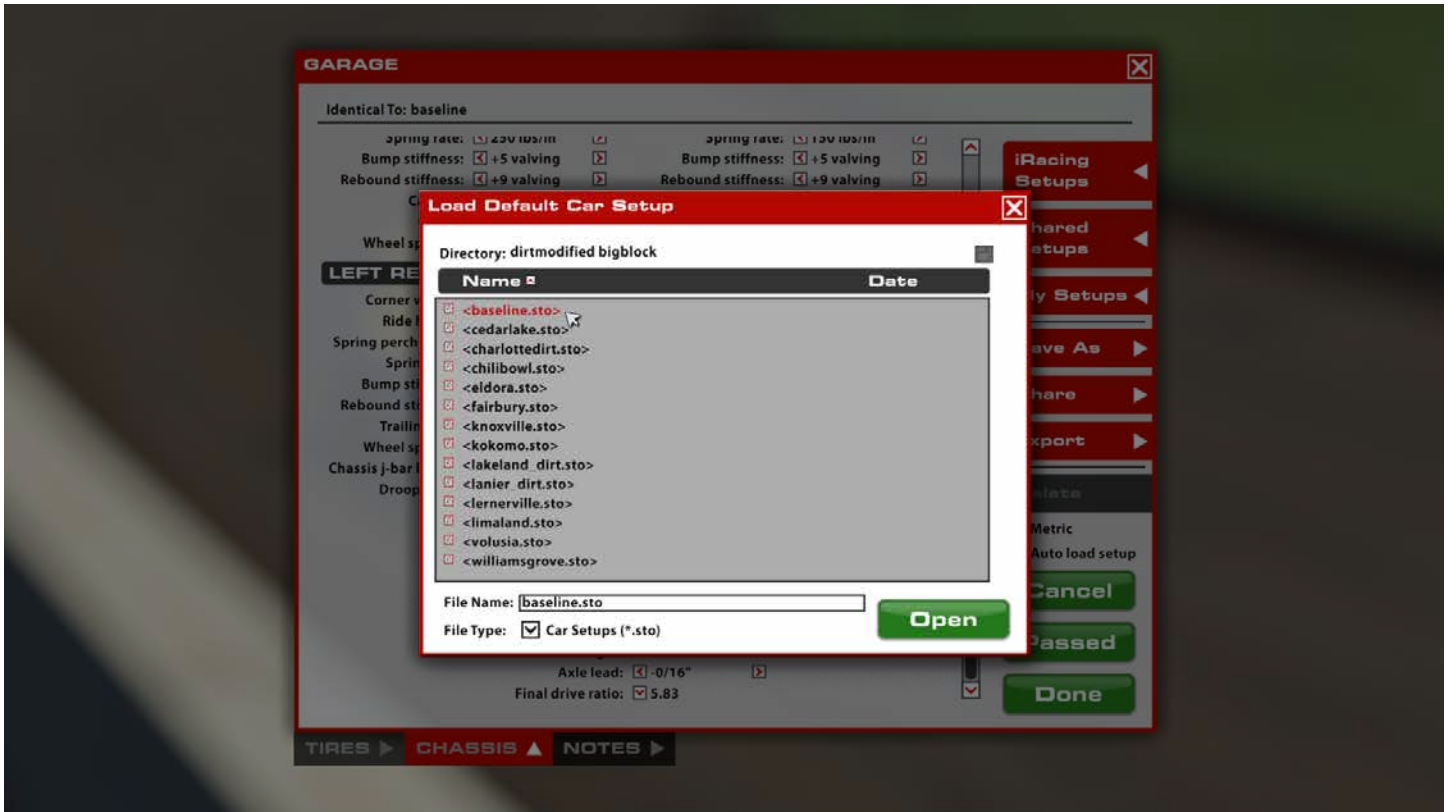
Once you are confident that you are nearing your driving potential with the included baseline setups, read on to begin tuning the car to your handling preferences.

GETTING STARTED



Once you load into the car, select 1st gear. Give it a bit of throttle to get underway. This car includes only one forward and one reverse gear, and does not require or allow clutch use. Once you are in 1st gear and rolling, your shifting is complete unless you spin or otherwise come to a stop and require reverse to get moving again. This car, as with many dirt cars, has a large range of motion in the rear suspension, which changes the attitude of the car significantly between off throttle and full throttle. To compensate for this motion, a steering correction is necessary. It is best to apply the throttle slowly when you are first learning to drive the car, so that you can become familiar with the steering corrections required at varying amounts of throttle. Steering corrections will become more intuitive as you grow comfortable with the car, at which point you can begin focusing on finding the best line, which is a challenge in the ever-changing conditions of a dirt surface, then working on setup.

LOADING AN iRACING SETUP



When you first load into a session, the iRacing Baseline setup will be automatically loaded onto the car. If you would like to try any of the other iRacing pre-built options, you may select it by going to Garage > iRacing Setups > and then selecting another option that fits 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.

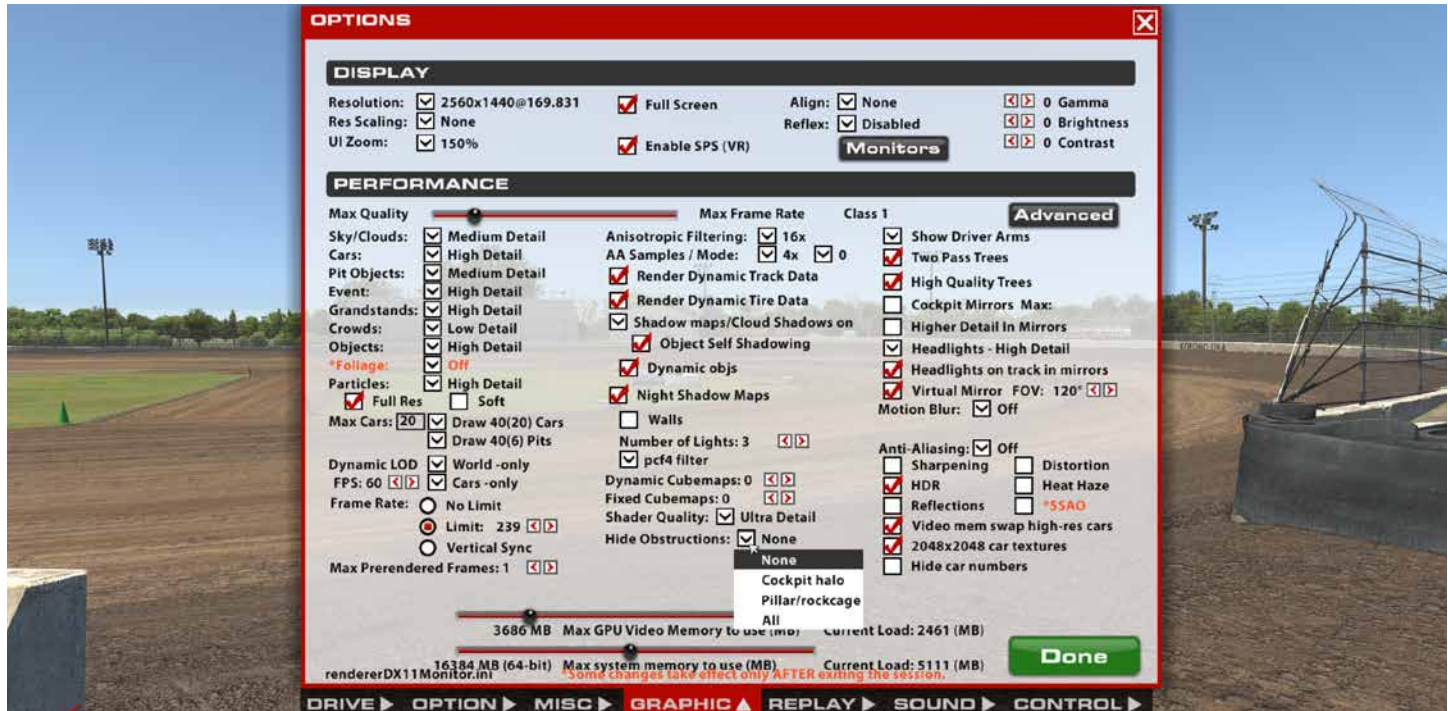
Dashboard

GAUGES & DIALS



The dash in this car is minimalist in nature, with the gauges being oil temperature, oil pressure, and water temperature on the main dash area, with a digital tachometer mounted to the bottom right below the main dash. Oil temperature and water temperature can be used in conjunction with the tachometer to evaluate the final drive gear ratio. General water temperatures below 220 degrees and oil temperatures below 250 degrees are desirable. The tachometer is so low as to be out of view on most display configurations, which will necessitate using the “look down” function in the sim to check the RPM. The look down function can be mapped to a key or button in your in-sim Options menu on the Drive page below the driving controls, and can be used in a replay to make it easier to see the RPM range as it varies around the track, rather than attempting to view it live.

ROCK SCREEN



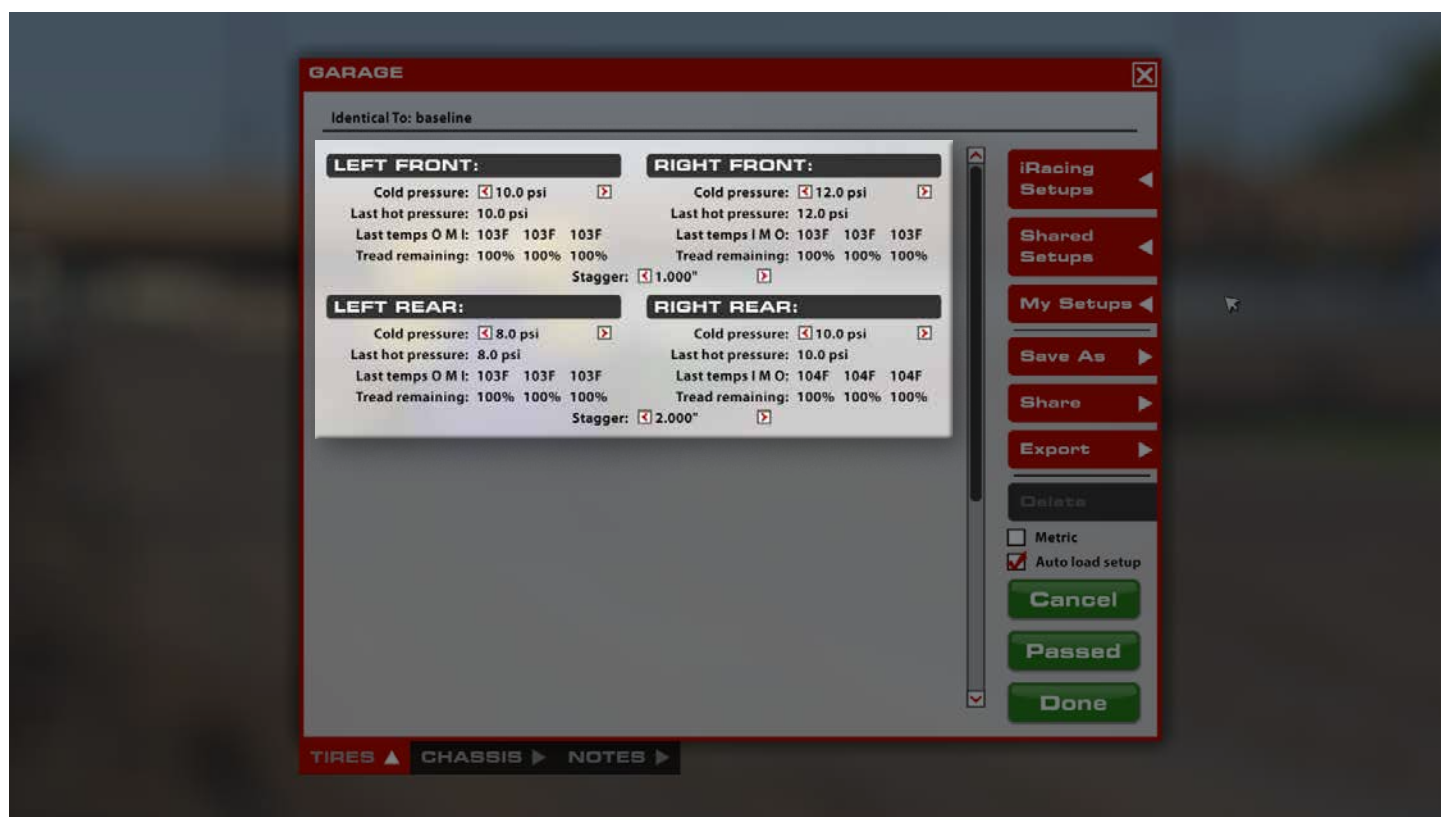
To improve driver visibility, the rock screen can be removed via the "Hide Obstructions" setting in the Options menu. To enable this option go to the Options and then Graphics menu, then change the "Hide Obstructions" setting to either "Pillar/rockpage" or "All". This will remove the screen completely 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

TIRE SETTINGS (ALL FOUR TIRES)



COLD 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 generally decrease grip. Lower pressures will increase rolling drag and heat buildup, but will increase grip. Higher speeds and loads will 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.

LAST HOT 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.

LAST TEMPS

Tire carcass temperatures, measured via Pyrometer, once the car has returned from the pits. Wheel Loads and the amount of work a tire is doing on-track is 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 while on track. These values are measured in three zones across the tread of the tire. The left sides of each tire should typically be the most heavily loaded and hottest, so the outsides of the left side tires and insides of right side tires.

TREAD REMAINING

The amount of tread remaining on the tire once the car has returned from the pits. For these cars and tires, wear is currently negligible, though this may change in the future.

Chassis

FRONT



STEERING BOX RATIO

The Steering Box Ratio is a numerical value for how fast the steering response is in the vehicle's steering box. This ratio can be thought of as the degrees of steering input needed to produce one degree of turn on the steering box output shaft. For example, a 12:1 steering ratio will require 12° of steering input to rotate the steering output shaft 1°. A steering box with a lower ratio will feel more responsive to steering inputs and will require less steering input to reach the amount needed to navigate a corner. A steering box with a higher ratio will feel less responsive and will require more steering input to reach the amount needed to navigate a corner.

PITMAN ARM LENGTH

The Pitman arm mechanically links the steering box to the front axle assembly. A longer Pitman arm speeds up the steering but requires more effort, and a shorter Pitman arm slows the steering but requires less effort. Pitman arm length and steering box ratio combined determine the ultimate steering ratio of the front axle, with the Pitman arm length being the finer adjustment.

STEERING OFFSET

Degrees of steering wheel offset, achieved with a combination of installing the steering wheel into the quick release mechanism off-center and adjusting front tie-rods. This can be used to compensate for chassis settings which place the wheel off center and is primarily a driver comfort adjustment.

FRONT TOE-IN

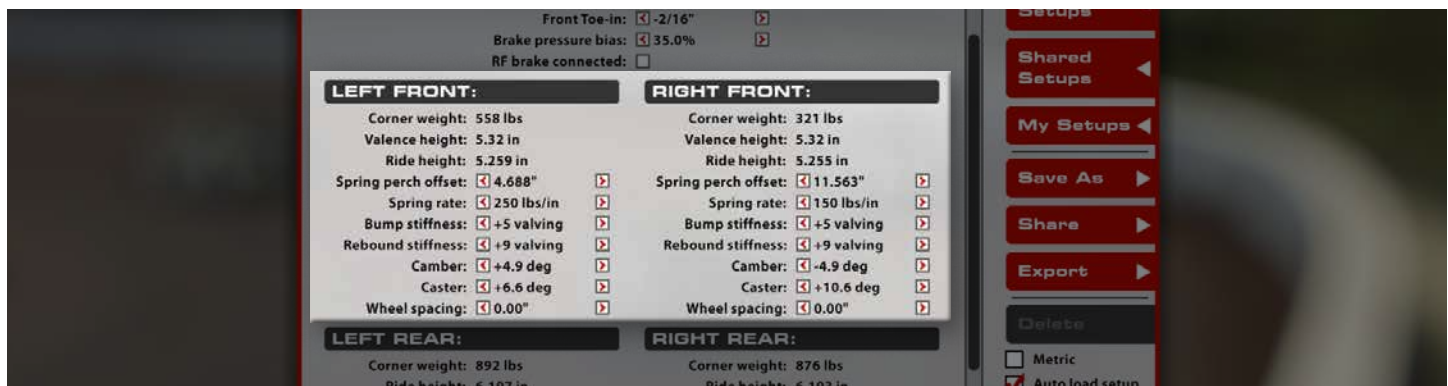
Toe is the angle of the wheel, looking from vertical, relative to the chassis centerline. Toe-in is when the front of the wheels are closer to the centerline while Toe-out is when the front of the wheels are farther from the centerline than the rear of the tires. On the front end, Toe will alter how 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.

BRAKE PRESSURE BIAS

The percentage of total brake pressure that is applied to the front brakes. A higher value indicates more front brake, which can increase stability on corner entry and reduce turn in response, and a lower value indicates more rear brake, which decreases stability on corner entry but can improve turn in response.

RF BRAKE CONNECTED

When this box is checked, the car has active brakes on all four wheels. When this box is not checked, the right front wheel's brake is disabled, which generates a yaw moment under braking and aids turn in response at the cost of stability. For tracks with a lot of moisture, it is often best not to connect the right front brake, but on very slick tracks connecting the right front brake may improve corner entry stability.



FRONT CORNERS

CORNER WEIGHT

The weight distribution on 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 setting. Once ride heights and corner weights are set, any change to a spring rate will typically require a corresponding spring perch offset adjustment to maintain static corner weight.

VALENCE HEIGHT

Distance from ground to lower edge of the front valence. This is not directly adjustable but changes as a result of the four corner

ride heights and is a good indicator of how much ground clearance is available from the car's starting Ride Heights.

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.

SPRING PERCH OFFSET

Spring perch offset is used to adjust ride height and corner weight. Adjusting this setting changes the preload on the spring under static conditions. Decreasing the value increases preload on the spring, adding weight to its corner and increasing the ride height at that corner. Increasing the value does the opposite, reducing height and weight on a given corner. These should be adjusted in pairs (left and right, for example) or with all four spring preload adjustments in the car to prevent crossweight changes while adjusting ride height.

SPRING RATE

Spring Rate changes how stiff the spring is, represented in force per unit of displacement. Softer springs allow for more roll and slower load transfer, and can be better on rougher or slicker tracks. Stiffer springs allow for less roll and quicker load transfer, and can help provide bite in loose dirt and moisture.

BUMP STIFFNESS

Bump stiffness affects how resistant the shock is to compression (reduction in length), usually in chassis movements as a result of driver input (steering, braking, & throttle) and cornering forces. Higher values will increase compression resistance and transfer load onto a given tire more quickly. Lower values reduce compression resistance and transfer load onto a given tire more slowly. Differences between left and right bump stiffness influence dynamic crossweight on corner entry and result in a dynamic shift in balance while the shocks are being compressed, with greater right front bump shifting the balance toward understeer.

REBOUND STIFFNESS

Rebound stiffness affects how resistant the shock is to extension (increase in length), typically during body movement as a result of driver inputs. Higher rebound values will slow extension of the shock, lower values will allow the shock to extend faster. When tuning for handling, higher front rebound can increase on-throttle mechanical understeer while lower values will maintain front end grip longer, helping to reduce mechanical understeer. Excessive front rebound can lead to unwanted oscillations due to the wheel bouncing off of the track surface instead of staying in contact.

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. Greater camber angles will generally increase the cornering force generated by the tire, but can reduce stability, especially in rougher conditions. Set the left side positive and the right side negative.

CASTER

How much the steering axis is leaned back (positive) or forward (negative), which influences dynamic load jacking effects as the car is steered. More positive caster results in a heavier steering feel but decreases dynamic crossweight while turning, as well as adding straight-line stability. Running less caster on the left-front will cause the vehicle to pull to the left when load transfers to the front axle.

WHEEL SPACING

Using wheel spacers or a change in wheel offset, either wheel can be spaced further outboard or inboard to shift the leverage on that wheel. Spacing the right front more outboard (more positive number) will generally tighten the car (understeer), and spacing it more inboard (more negative number) will generally free the car up more (oversteer). The opposite is true for the left front.



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 setting.

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.

SPRING PERCH OFFSET:

Used to adjust ride height and corner weight, adjusting this setting applies a preload to the spring under static conditions. Decreasing the value increases preload on the spring, adding weight to its corner and increasing the ride height at that corner. Increasing the value does the opposite, reducing height and weight on a given corner. These should be adjusted in pairs (left and right, for example) or with all four spring preload adjustments in the car to prevent crossweight changes while adjusting ride height.

SPRING RATE

Spring Rate changes how stiff the spring is, represented in force per unit of displacement. Softer springs allow for more roll and slower load transfer, and can be better on rougher or slicker tracks. Stiffer springs allow for less roll and quicker load transfer, and can help provide bite in loose dirt and moisture.

BUMP STIFFNESS

Bump stiffness affects how resistant the shock is to compression (reduction in length), usually in chassis movements as a result of driver input (steering, braking, & throttle) and cornering forces. Higher values will increase compression resistance and transfer load onto a given tire more quickly. Lower values reduce compression resistance and transfer load onto a given tire more slowly. Differences between left and right bump stiffness influence dynamic crossweight on corner entry and result in a dynamic shift in balance while the shocks are being compressed, with greater right front bump shifting the balance toward understeer.

REBOUND STIFFNESS

Rebound stiffness affects how resistant the shock is to extension (increase in length), typically during body movement as a result of driver inputs. Higher rebound values will slow extension of the shock, lower values will allow the shock to extend faster. When tuning for handling, higher front rebound can increase on-throttle mechanical understeer while lower values will maintain front end grip longer, helping to reduce mechanical understeer. Excessive front rebound can lead to unwanted oscillations due to the wheel bouncing off of the track surface instead of staying in contact.

TRAILING ARM ANGLE

Each trailing arm is mounted to a bracket on the rear axle and on the chassis. This angle is the uphill angle from the axle to the chassis. Because this car has a large amount of suspension travel and roll, these angles influence both the roll steer of the axle, and the load jacking through the trailing arms. Larger angles result in more roll steer and load transfer as you transition on and off the throttle and enter and exit the corners, while smaller angles result in less roll steer and reduce dynamic load changes.

More angle on the left rear will generally increase left rear drive on throttle, tightening the car on throttle and loosening the car off throttle, while more angle on the right rear will generally increase right rear drive on throttle, loosening the car all around. More angle in either will increase roll steer, with the left rear having the greater influence due to greater travel and range of adjustment. More angle in both maximizes roll steer, generally loosening the car.

WHEEL SPACING

Using wheel spacers or a change in wheel offset, either wheel can be spaced further outboard or inboard to shift the leverage on that wheel. Spacing the left rear more outboard (more positive number) will generally tighten the car (understeer), and spacing it more inboard (more negative number) will generally free the car up more (oversteer). The opposite is true for the right rear.

CHASSIS J-BAR HEIGHT

The j-bar locates the rear end laterally in the car, and is a shorter, more responsive implementation of a panhard bar. Lower overall j-bar height lowers the rear roll center, generally tightening the car in the corners, and higher overall raises the roll center, loosening the car in the corners. When rake is applied (difference between chassis height and rear end height) the average of the heights is the approximate roll center height. Increasing rake (higher on the chassis relative to the rear end) generally increases roll angle and helps the car steer through the center, but reduces drive off the corner. Less rake tightens the center and provides more drive off.

DROOP CHAIN

The droop chain limits droop travel on the left rear. A longer droop chain allows greater extension, and a shorter droop chain allows lesser extension. Reducing droop travel reduces left rear hike and body roll. This adjustment can be useful for limiting dynamic roll steer and balancing it with drive off the corner.

REAR



FUEL FILL TO

Fuel fill level minimum should be sufficient for the desired number of laps to be completed, but can also be used for rear ballast. If you wish to increase the rear weight percentage for handling purposes, it can be useful to run excess fuel beyond the volume required to complete the laps.

REAR WEIGHT

Percentage of total static weight supported by the rear tires. This percentage can be adjusted by changing the fuel fill level. More rear weight increases rotation in the corner off throttle, and tightens the car on throttle. Less rear weight reduces rotation off throttle and reduces drive on throttle.

CROSS WEIGHT

Percentage of total static weight supported by the right front and left rear tires. This percentage can be adjusted by changing wheel loads using trailing arm and panhard bar adjustments or spring preload. When adjusting spring preload, to maintain ride heights you should adjust opposing corners in conjunction. If preload is added to the right front and left rear, preload on the left front and right rear should be correspondingly reduced. Increasing cross weight generally tightens the car, and reducing crossweight generally loosens the car.

LEFT REAR BITE

This number is the load difference of the left rear minus the right rear. For example if the left rear corner weight is 910 lbs and the right rear corner weight is 860 lbs, the left rear bite would be 50 lbs. Increasing bite provides increased left rear drive off the corner and generally tightens the car. This value cannot be adjusted independently of the cross weight and rear weight.

AXLE J-BAR HEIGHT

Lower overall j-bar height lowers the rear roll center, generally tightening the car in the corners, and higher overall raises the roll center, loosening the car in the corners. When rake is applied (difference between chassis height and rear end height) the average of the heights is the approximate roll center height. Increasing rake (higher on the chassis relative to the rear end) generally increases roll angle and helps the car steer through the center, but reduces drive off the corner. Less rake tightens the center and provides more drive off.

DECK HEIGHT

Deck height is the vertical height of the rear deck above the ground. Increasing deck height generally increases rear downforce, which is more prominent on longer, higher speed tracks. Increasing rear height also provides greater lateral load transfer, increasing body roll.

AXLE LEAD

Axle lead is the static misalignment of the rear axle in the car. A positive number indicates the right rear leads the left rear, tightening the car, and a negative number indicates the right rear trails the left rear, loosening the car. This adjustment can be used to compensate for roll steer effects or fine tuning handling.

FINAL DRIVE RATIO

The gear ratio in the rear end should be set based on track length and track state to balance acceleration and top end RPM. Too low a numerical gear can lead to wheel spin and over rev the engine, while too high a numerical car can lead to bogging on throttle and slow acceleration. A good balance will provide manageable throttle response and good acceleration without reaching the rev limiter.