NASCAR NEXTGEN CARS

FORD MUSTANG
TOYOTA CAMRY
CHEVROLET CAMARO ZL1

USER MANUAL

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CLICK TO VIEW A SECTION

Dear iRacing User,

Congratulations on your purchase of the NASCAR NextGen Race 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 seventh generation of NASCAR's Cup Series car aims to put the "stock" back in "Stock Car", with multiple changes to bring the cars more in-line with the cars you see on the road. The Chevrolet Camaro ZL1, Toyota Camry, and Ford Mustang now feature symmetrical, composite bodies with less emphasis on sideforce and downforce to make the racing closer than ever before. Under the hood, the 650hp engine delivers power to the track through an all-new 5-speed sequential gearbox and, for the first time in NASCAR's history, the NextGen car features four-wheel independent suspension with coil-over shocks.

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

FRONT AND REAR INDEPENDANT, DOUBLE-WISHBONE SUSPENSION

LENGTH	WIDTH	WHEELBASE	DRY WEIGHT	WET WEIGHT WITH DRIVER
4902 mm	1994 mm	2794 mm	1456 kg	1601 kg
193 in	78 in	110 in	3210 lbs	3530 lbs

POWER UNIT

NATURALLY ASPIRATED STEEL BLOCK PUSHROD V8

DISPLACEMENT	OVALS OVER 1 MILE		SHORT TRACKS / RC		RPM LIMIT
	TORQUE	POWER	TORQUE	POWER	
5.86 Liters	470 lb-ft	650 bhp	400 lb-ft	550 bhp	9100
358 cid	637 Nm	485 kW	542 Nm	410 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.

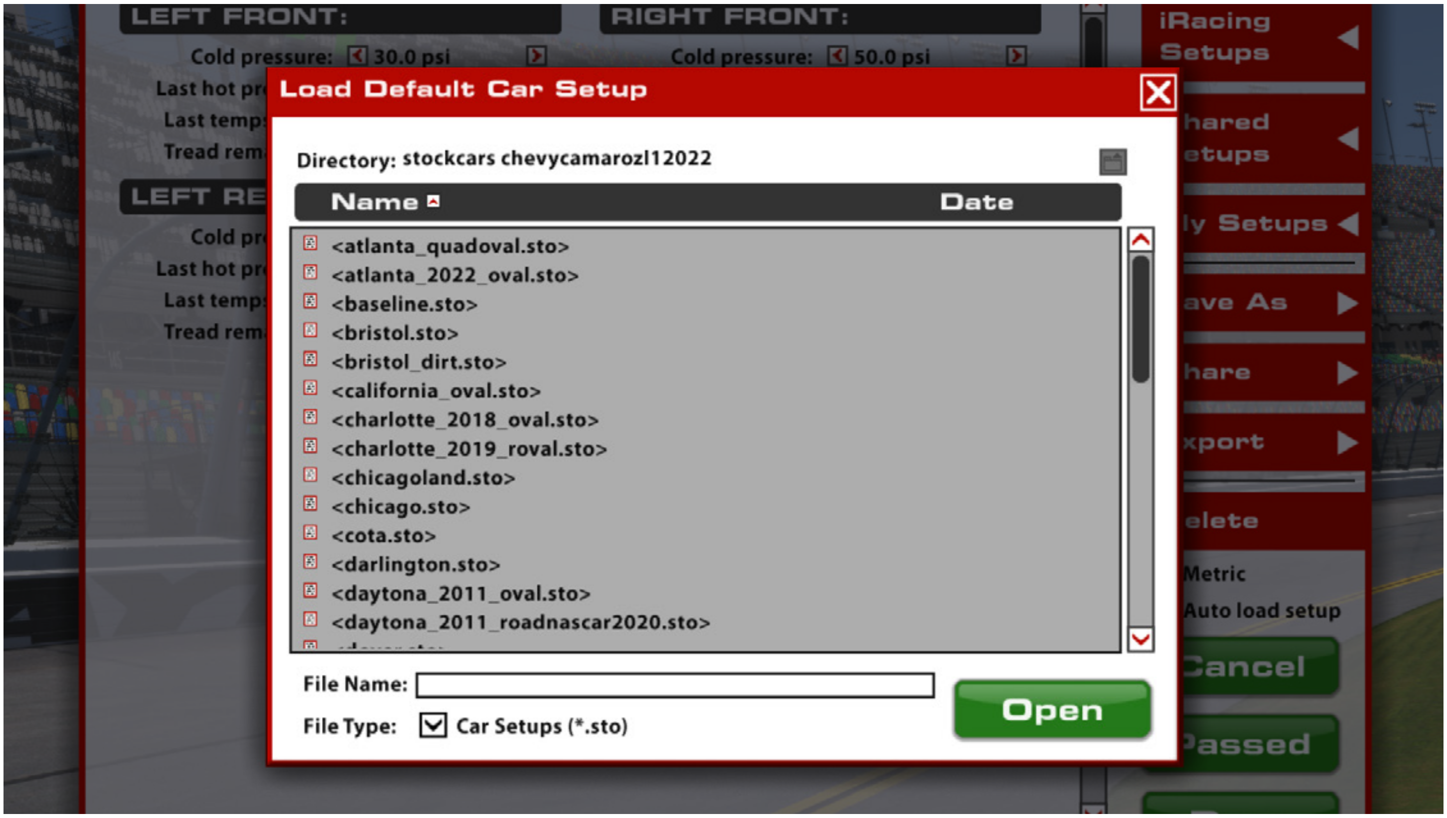
Before diving into chassis adjustments, though, it is best to become familiar with the car and track. To that end, we have provided baseline setups for each track commonly raced by these cars. To access the baseline setups, simply open the Garage, click iRacing Setups, and select the appropriate setup 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, press the clutch and select 1st gear. Give it a bit of throttle and ease off the clutch pedal to get underway. Unlike previous NASCAR Race Cars that used H-pattern transmissions, the NextGen cars use a 5-speed sequential gearbox. Shifting is completely clutchless, with upshifts not requiring any throttle blip to move to the next gear. Downshifting is as simple as pressing the shifter to select the next lower gear and blipping the throttle. Upshifting is recommended when the RPM gauge on the dash illuminates in red, usually around 9000rpm.

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. Because this car uses slightly different chassis and body configurations on different types of tracks, it will be necessary to load a setup from the same track type to pass tech inspection. For example, a setup for Talladega will pass at Daytona, but likely will not pass at Bristol. 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.

To save your setup for reference later, click the "Export" button on the right side of the garage and save the file. This will produce an HTML file with all of the settings for that setup that can be opened at any time and viewed in a web browser.

Dash Configuration

PAGE 1

Page 1 displays all information in a digital numerical format with a bar-style tachometer. The top row displays, from left to right, Oil Pressure, previous Lap Time, Engine RPM, and Oil Temperature. The second row, from left to right, displays engine Water Pressure, Fuel Pressure, Battery Voltage, and Water Temperature. For pressures and temperatures, the units displayed will follow the setting in the setup garage: Pounds per Square Inch (PSI) and Degrees Fahrenheit for Imperial units, Bar and Degrees Celsius for Metric units. Across the very bottom of the dash is a horizontal bar-style tachometer displaying Engine RPM. A gear indicator is located between the Voltmeter and the Water Temperature values.

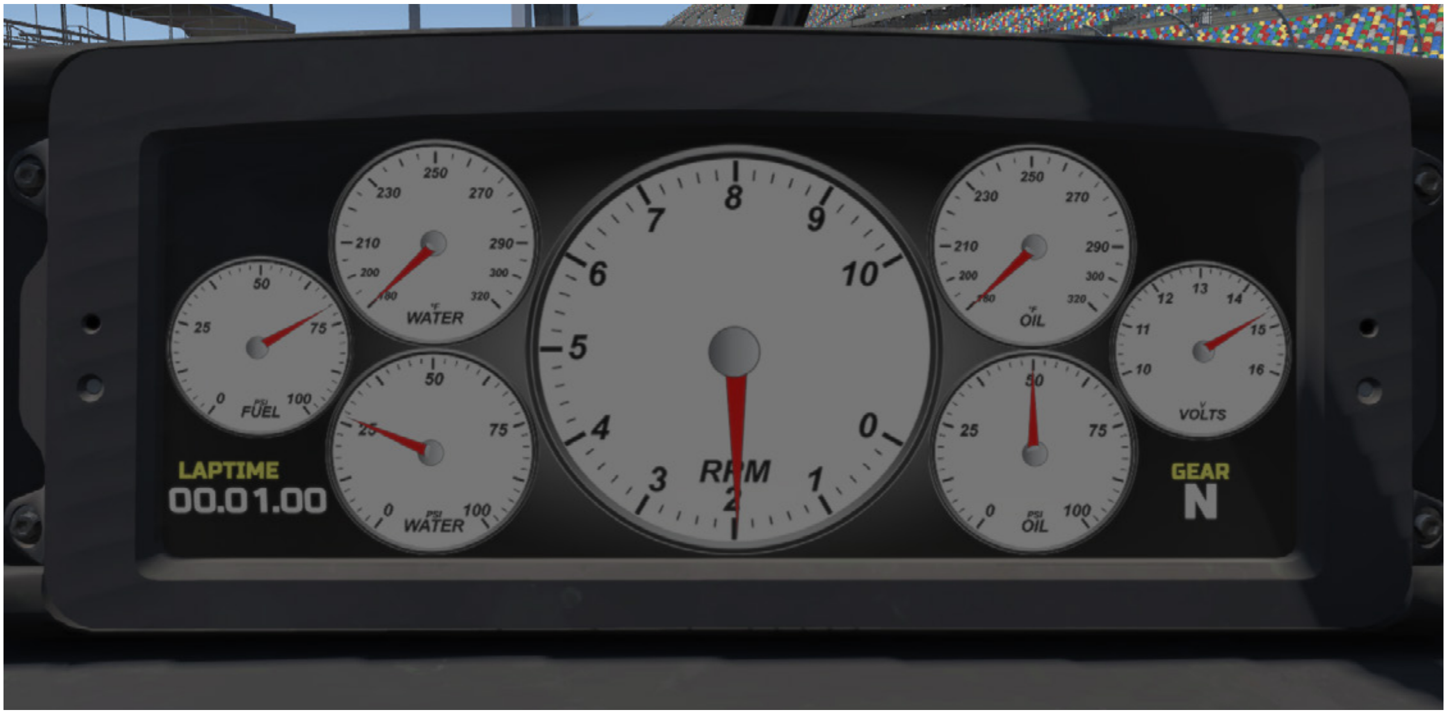
Below the numerical displays are the pit road speed lights, a graphical representation of the engine RPM and are tuned to display proper pit road speed while in 2nd gear. When the vehicle's speed is lower than pit road speed, the lights will be illuminated in an orange-yellow color. As vehicle speed increases to the pit road speed limit, these lights will change to a green color. When the vehicle is at the pit road speed limit, all nine lights will be green. If the vehicle speed exceeds the pit speed limit, the lights will turn red.

PAGE 2

Page 2 displays all information in a digital numerical format like Page 1, but replaces the bar-style tachometer with a more traditional analog-style tachometer. Along the left side of the dash, from the top to the bottom, are the previous Lap Time, Engine Oil Pressure, Fuel Pressure, and Battery Voltage. On the right side of the dash, from the top to the bottom, is the Engine Water Temperature, Engine Oil Temperature, and Engine Water Pressure. For pressures and temperatures, the units displayed will follow the setting in the setup garage: Pounds per Square Inch (PSI) and Degrees Fahrenheit for Imperial units, Bar and Degrees Celsius for Metric units. In the center of the dash display is a large analog-style tachometer displaying Engine RPM. A gear indicator is located in the upper-right corner of the display.

When engine RPM drops below normal racing speeds, the pit road speed lights will appear as an overlay across the bottom of the display. These lights are a graphical representation of the engine RPM, tuned to work properly when the transmission is in 2nd gear. When the vehicle's speed is lower than pit road speed, the lights will be illuminated in an orange-yellow color. As vehicle speed increases to the pit road speed limit, these lights will change to a green color. When the vehicle is at the pit road speed limit, all nine lights will be green. If the vehicle speed exceeds the pit speed limit, the lights will turn red.

PAGE 3



Page 3 displays all information in a more traditional analog-style gauge cluster with a large tachometer in the center and six accessory gauges on either side of the tachometer. On the left side, clockwise from top, is the Engine Water Temperature, Water Pressure, and Fuel Pressure. On the right side, clockwise from top, is the Engine Oil Temperature, Battery Voltage, and Engine Oil Pressure. On the bottom left of the dash is the previous Lap Time. A gear indicator is located in the lower right corner of the display beneath the Volts gauge.

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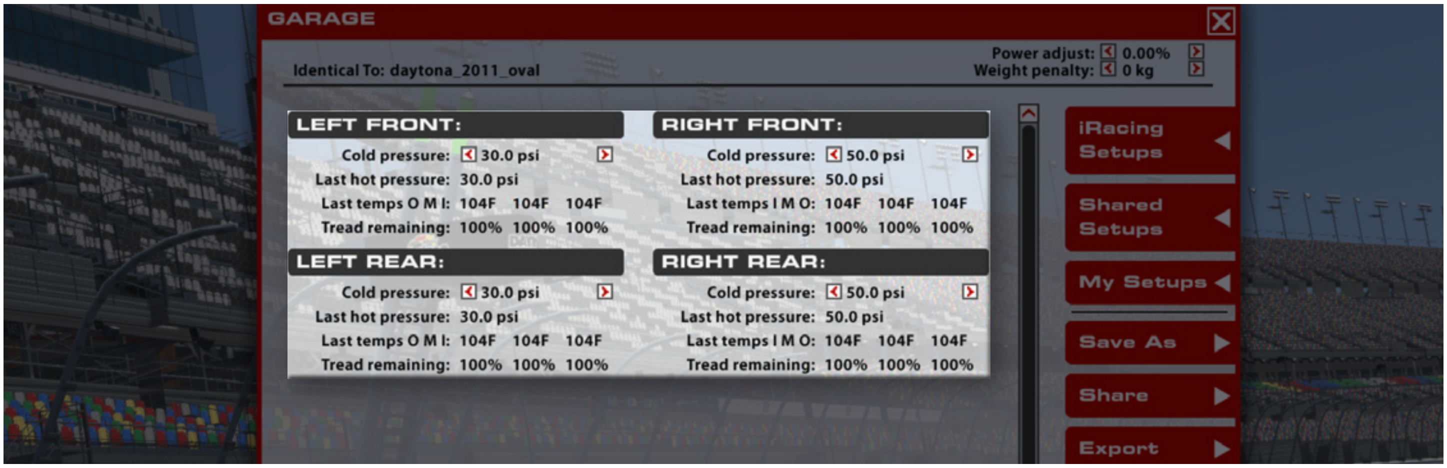
Advanced Setup Options

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



COLD AIR PRESSURE

Air pressure in the tire when the car is loaded into the world. Higher pressures will reduce heat buildup, but will provide better grip with higher loads and higher speeds. Lower pressures will increase heat buildup, but will provide better grip at lower loads and lower speeds. Cold pressures should be set to track characteristics for optimum performance.

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. On left-turn ovals, the right-front tire should always see the highest buildup on a balanced car, while the left sides should be roughly the same, but it is important to monitor the hot pressures after a run and adjust accordingly. Ideally, the difference in hot pressures on one side of the car should be roughly equal to the difference between cold pressures after a longer run.

TIRE TEMPERATURES

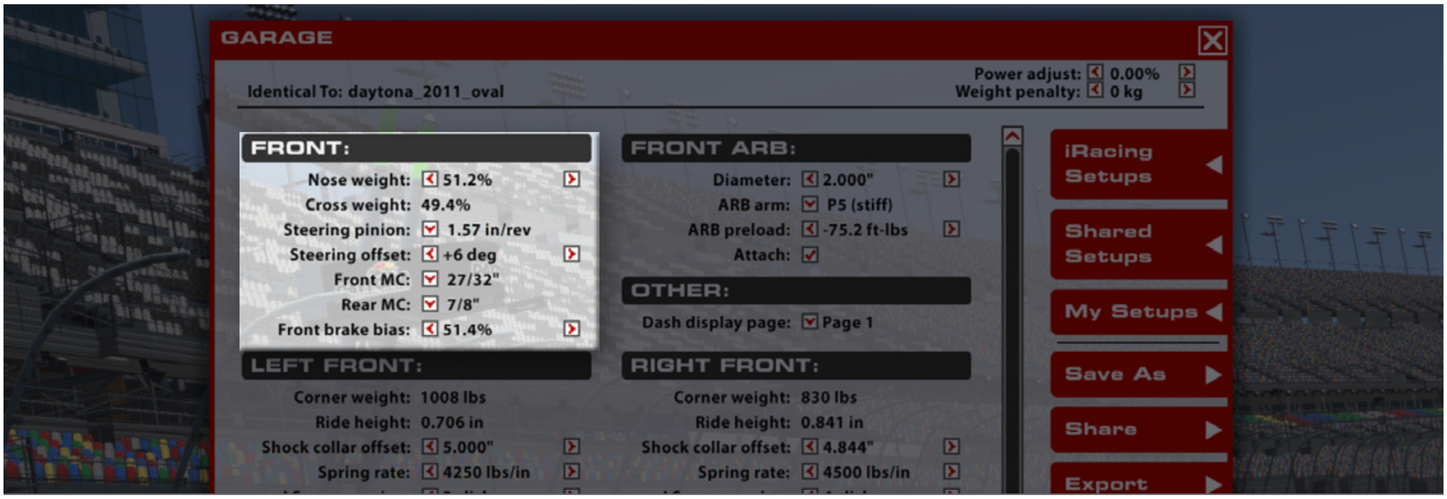
Tire carcass temperatures once the car has returned from the pits. Wheel Loads and the amount of work a tire is doing on-track is reflected in the tire's temperature, and these values can be used to analyze the car's handling balance. Center temperatures are useful for directly comparing the work done 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.

TREAD REMAINING

The amount of tread remaining on the tire once the car has returned from 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 three zones across the tread of the tire in the same locations as the temperature measurements.

Chassis

FRONT



NOSE WEIGHT

The vehicle's Nose Weight is the percentage of total vehicle weight on the front tires. Nose Weight represents a rough approximation of the longitudinal Center of Gravity location in the vehicle and has a direct influence on the high-speed stability of the vehicle. Higher Nose Weight values result in a more directionally-stable vehicle, good for low-grip tracks and situations where the vehicle is set up with extra front downforce. Conversely, lower Nose Weight values are good for high-grip tracks and configurations with high rear downforce levels. Smaller tracks will also see benefits from lower Nose Weight values, as it will allow the rear of the vehicle to rotate easier.

CROSS WEIGHT

Cross Weight is the amount of weight on the car's Left-Rear and Right-Front tires relative to the entire weight of the car, displayed in percent. This is adjusted via the corner Spring Perch Offset adjustments as well as ARB preload to a small extent. For an oval car, Cross Weight is one of the most influential settings for grip level while the vehicle is in a turn. Higher Cross Weight values will add weight to the left-rear and right-front, both stabilizing entry and helping drive-off on corner exit. Lower Cross-Weight values will help the vehicle rotate and keep it "free" in the corner to prevent speed from being lost, however too low can result in unstable entry and exit. For this vehicle, excessively high crossweight value can also lead to left-front tire lockups under braking due to reduced load on the left-front wheel.

STEERING PINION

The Steering Pinion setting changes the size of the pinion gear on the end of the steering shaft. Represented as distance per revolution of the steering wheel, the value displays how much steering rack movement will occur while turning the wheel. For example, a 60 mm/rev pinion will move the steering rack 60mm for a full turn of the steering wheel. Higher values produce a faster steering feel, lower numbers produce a slower steering feel.

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 MC

The size of the front brake master cylinder can be changed to alter the braking feel for the front brakes. Larger diameter master cylinders will make the pedal feel softer, requiring more brake pedal travel and force to reach the same amount of braking force as a smaller master cylinder. This can be used to tune braking feel for a given driving style as well as to reduce the chances of a brake lockup under heavy braking.

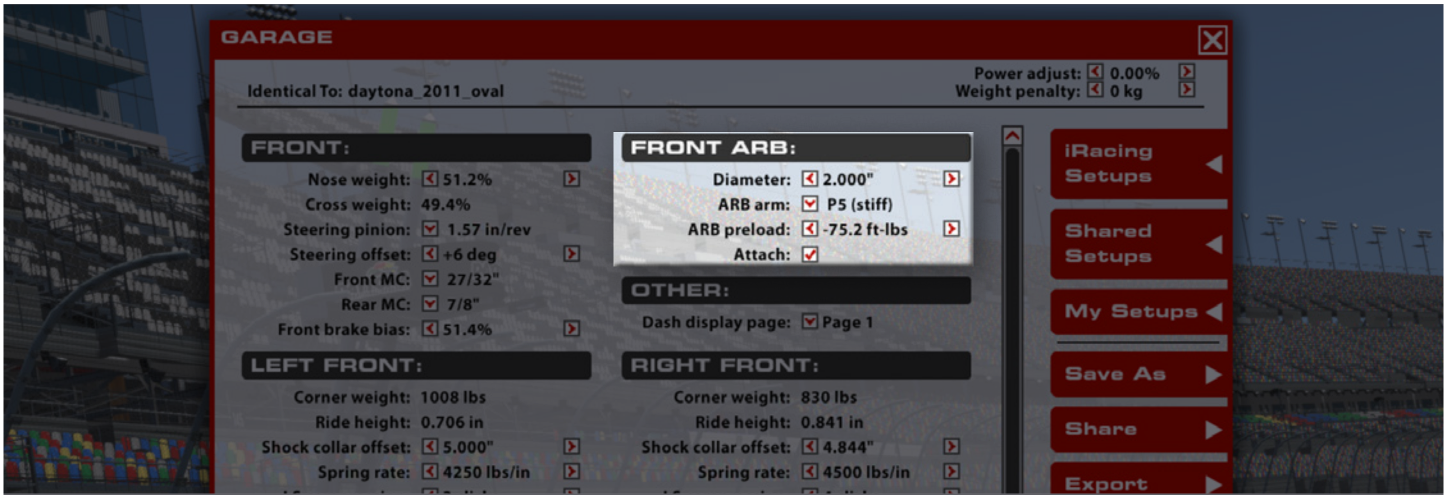
REAR MC

The size of the rear brake master cylinder can be changed to alter the braking feel of the rear brakes. Larger diameter master cylinders will make the pedal feel softer, requiring more brake pedal travel and force to reach the same amount of braking force as a smaller master cylinder. This can be used to tune braking feel for a given driving style as well as to reduce the chances of a brake lockup under heavy braking.

FRONT BRAKE BIAS

Brake Bias is the percentage of braking force that is being sent to the front brakes. Values above 50% result in more pressure being sent to the front, while values less than 50% send more force to the rear. This should be tuned for both driver preference and track conditions to get the optimum braking performance for a given situation.

FRONT ARB



DIAMETER

The Front Anti-Roll Bar (ARB, or Sway Bar) diameter affects the roll stiffness of the front suspension. Options are a Stiff bar (2.00" Diameter) or a Soft bar (1.375" diameter). The stiffer bar will reduce body roll when cornering and can increase steering responsiveness, but can induce understeer when cornering. The softer bar will increase body roll as well as reduce understeer when cornering.

ARB ARM

The orientation of the ARB arms can be changed to alter their overall stiffness and effectiveness. Represented alphanumerically from P1 (softest) to P5 (stiffest).

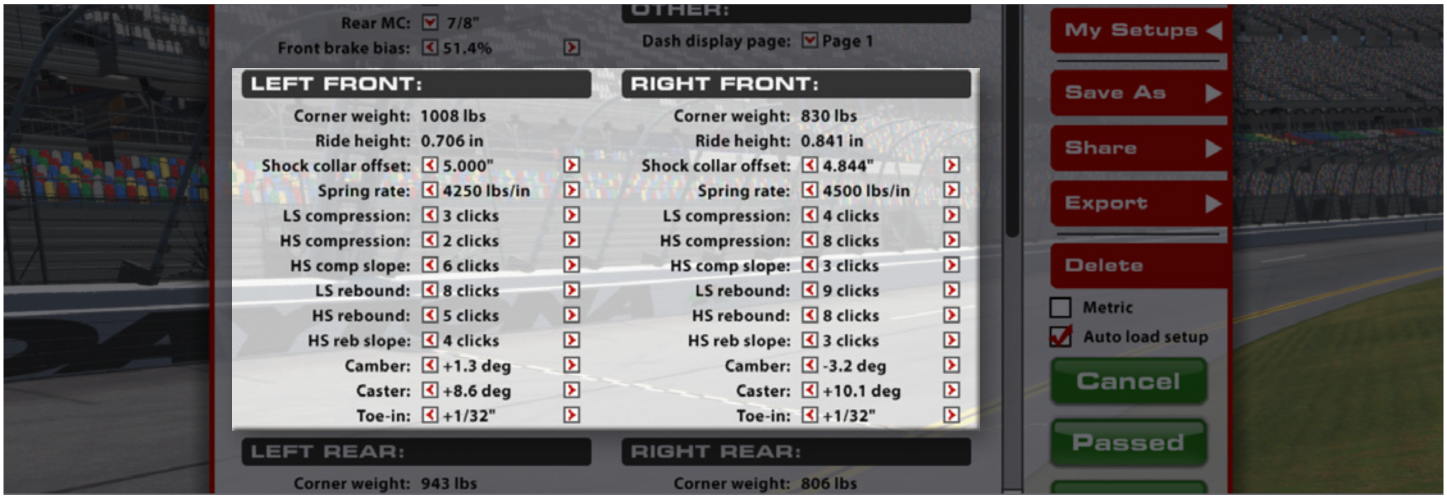
ARB PRELOAD

The ARB Preload is the static load in the bar while the vehicle is in the garage. Preload adjustments can be used to alter the dynamic loads in the bar while on track, and can be used to remove or add bar load in the corners and on the straights.

ATTACH

A quick way to unhook the anti-roll bar to allow for static suspension adjustments without bar twist confusing things; increase link slack and unhook the ARB before making spring/ride height adjustments; attach and reduce link slack (ARB preload) when done. This option will completely detach the bar and keep it from being loaded while on track, if desired.

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 Shock Collar Offset setting.

RIDE HEIGHT

Distance from ground to the rub blocks on the bottom of the car, measured to the bottom of the blocks behind the front wheels. Adjusting Ride Heights is key for optimum performance, as they can directly influence the vehicle's aerodynamic performance as well as mechanical grip. Reducing the front ride height will increase front downforce and increase oversteer at higher speeds.

SHOCK COLLAR OFFSET

Shock Collar 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 a force per unit of displacement. Primarily responsible for maintaining ride height and a good attitude under changing wheel loads, stiffer springs will maintain the car's attitude better while sacrificing mechanical grip. Softer springs will deal with bumps better and increase mechanical grip, however this could cause the chassis to pitch and roll too much, hurting aerodynamic performance at faster tracks.

LS COMPRESSION

Low-Speed (LS) Compression affects how resistant the shock is to compression (reduction in length), usually in chassis movements as a result of driver input, such as the front shocks under braking. Higher LS Compression settings will prevent the shock from compressing quickly and can quickly increase the load transferred to the wheel when the suspension is in compression, but can prevent the suspension from absorbing smaller bumps and dips in the track. Lower LS compression settings will allow for better bump absorption, but can hurt aerodynamic stability due to excessive body movement with driver inputs.

HS COMPRESSION

The High-Speed (HS) Compression controls how resistant the shock is to compression at higher shock shaft speeds, roughly 1.5 in/s. This range of motion is usually associated with very bumpy racing surfaces or curb strikes, such as seen on road courses. Lower HS Compression values will reduce the force exerted in these situations, allowing these large forces to be absorbed by the suspension without changing the low-speed characteristics of the shock. This is great for very bumpy tracks or road courses where the car will see heavy curb usage, while smoother tracks will benefit from higher HS Compression values.

HS COMP SLOPE

The High-Speed Compression can be further tuned with the Compression Slope setting. This setting shifts the high-speed adjustment of the shocks higher or lower, allowing for a wider range of options for various track conditions. Higher slope settings will produce a more linear compression setting, with compression force increasing with velocity. These settings are good for very bumpy surfaces to keep the shock from "blowing out" over large bumps, preventing the chassis from striking the racing surface. Lower slope settings will produce a more digressive compression setting, with forces not increasing significantly as velocity increases. This is good for smoother tracks where large suspension movement is not expected. When tuning shocks for a track, change the slope setting first to suit the track, then fine-tune the shock using the high- and low-speed settings.

LS REBOUND

Low-Speed (LS) Rebound affects how resistant the shock is to extension (increase in length), typically during body movement as a result of driver inputs, such as the rear shocks under braking. Higher rebound values will slow extension of the shock, lower values will allow the shock to extend faster. Higher rebound values can better control aerodynamic attitude but can result in the wheel being unloaded when the suspension can't extend enough to maintain proper contact with the track. Excessive front rebound can lead to unwanted oscillations due to the wheel bouncing off of the track surface instead of staying in contact.

HS REBOUND

High-Speed (HS) Rebound affects how resistant the shock is to extension (increase in length), at higher shock shaft speeds, usually above 1.5 in/s. This area is commonly seen as a response to high-speed compression, such as bumps in the racing surface or curb strikes. Higher values will prevent the shock from extending too quickly after a bump, which can help to maintain aerodynamic consistency in terms of body attitude, but too much rebound can keep the suspension from extending quickly enough and cause a loss of grip. Lower values will allow faster suspension extension, but can allow too much body movement and potentially hurt aerodynamics.

HS REBOUND SLOPE

The High-Speed Rebound can be further tuned with the Rebound Slope setting. This setting shifts the high-speed adjustment of the shocks higher or lower, allowing for a wider range of options for various track conditions. Higher slope settings will produce a more linear rebound setting, with rebound force increasing steadily with velocity. These values will give a more controlled damping characteristic over very bumpy surfaces. Lower values will result in a more digressive rebound curve, which is good for smoother surfaces.

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. Higher camber angles 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. For ovals, set the left side positive and the right side negative. For road courses, all four wheels should be set with negative camber.

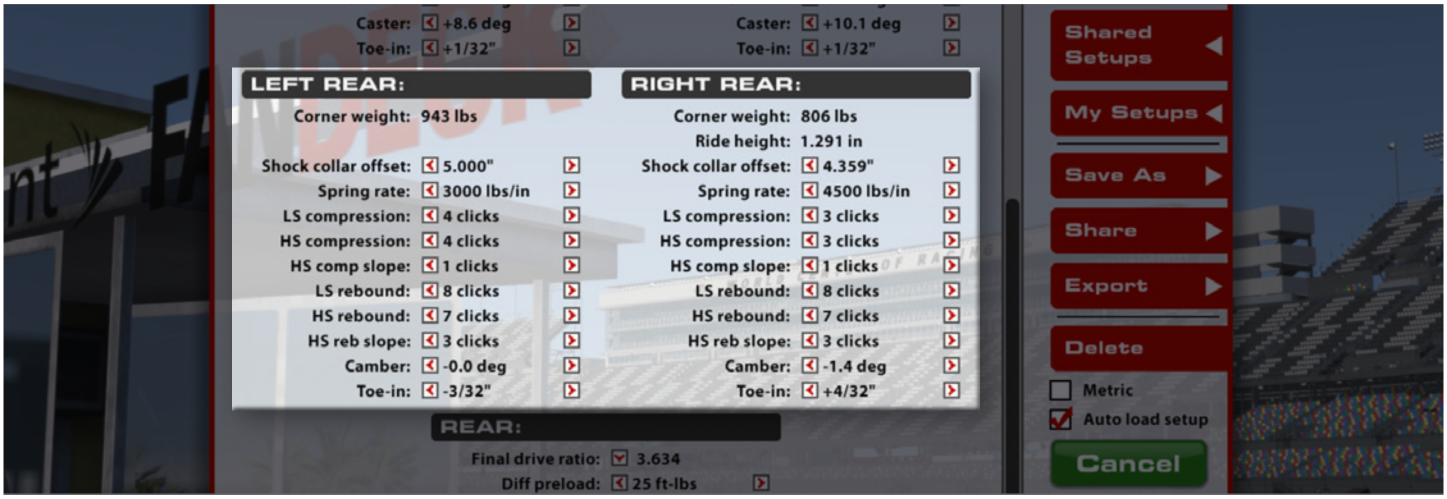
CASTER

Caster is 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, a desirable effect on ovals.

TOE-IN

Toe is the angle of the wheel, when viewed from above, relative to the centerline of the chassis. Positive toe-in is when the front of the wheel is closer to the centerline than the rear of the wheel, and negative toe-in (toe-out) is when the front of the wheel is farther away from the centerline than the rear of the wheel. More net toe-out will destabilize the car in a straight line and help with turn-in but increases slip angle on the front wheels and can risk over-slipping the front tires, which can result in sudden understeer when cornering.

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 Shock Collar Offset setting.

RIGHT REAR RIDE HEIGHT

Distance from ground to the skid block on the bottom of the car, measured to the bottom of the right-rear skid block ahead of the right-rear wheel. The left-rear corner lacks a skid block and doesn't have a corresponding ride height. Adjusting Ride Heights is key for optimum performance, as they can directly influence the vehicle's aerodynamic performance as well as mechanical grip. Reducing the rear ride height will increase rear downforce and increase stability at higher speeds.

SHOCK COLLAR OFFSET

Shock Collar 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. Primarily responsible for maintaining ride height and aerodynamic attitude under changing wheel loads, stiffer springs control the chassis attitude better (less roll or pitch change) which is good for aerodynamics and camber control, but mechanical grip is often better with softer springs which allow for more track surface compliance but reduce aerodynamic control. For ovals, a softer left-rear spring (relative to the right-rear) is desired to prevent the dynamic cross from being too high in the corners, which will result in a balance shift towards understeer through a run.

LS COMPRESSION

Low-Speed (LS) Compression affects how resistant the shock is to compression (reduction in length), usually in chassis movements as a result of driver input, such as the rear shocks under acceleration or when leaving a banked corner. Higher LS Compression settings will prevent the shock from compressing quickly and can quickly increase the load transferred to the wheel when the suspension is in compression, but can prevent the suspension from absorbing smaller bumps and dips in the track. Lower LS compression settings will allow for better bump absorption, but can hurt aerodynamic stability due to excessive body movement with driver inputs.

HS COMPRESSION

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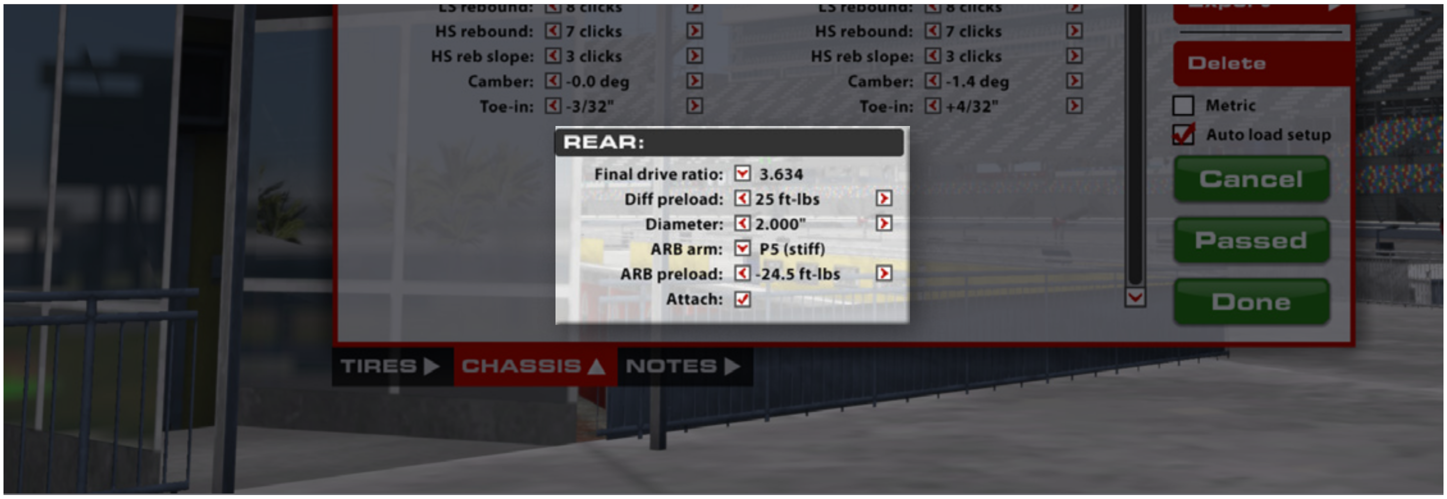
CAMBER

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 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. For ovals, set the left side positive and the right side negative. For road courses, both rear wheels should be set with negative camber.

REAR



FINAL DRIVE RATIO

The Final Drive Ratio is the ratio between the driveshaft pinion and the differential ring gear. Higher number values produce better acceleration but reduce top speed, lower number values reduce acceleration but result in a higher top speed.

DIFF PRELOAD

The differential can be set with a static preload applied to the friction surfaces. Higher values produce more locking force in the differential in all conditions, producing more understeer under acceleration and deceleration. This value will also affect mid-corner performance, with higher values not allowing the differential to unlock as much, increasing mid-corner understeer.

DIAMETER

The Rear Anti-Roll Bar (ARB, or Sway Bar) diameter affects the roll stiffness of the rear suspension. Options are a Stiff bar (2.00" Diameter) or a Soft bar (1.375" diameter). The stiffer bar will reduce body roll when cornering and can increase steering responsiveness, but can induce oversteer when cornering. The softer bar will increase body roll as well as reduce oversteer when cornering.

ARB ARM

The orientation of the ARB arms can be changed to alter their overall stiffness and effectiveness. Represented alphanumerically from P1 (softest) to P5 (stiffest).

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