DALLARA iR-01

USER MANUAL

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DEAR iRACING USER,

Congratulations on your purchase of the Dallara IR-01! 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 Dallara IR-01 is iRacing and Dallara's answer to the challenges of premier international open-wheel motorsport. Designed to blend together the best elements of grand prix racing's past, present, and future, this fast and agile machine is easy to pick up, but limited electronics and driver aids make it challenging to master.

The IR-01 is powered by a naturally aspirated, 3.0-liter V10 reminiscent of the engines that dominated the sport in the early and mid 1990s. Producing upwards of 900 horsepower at a dry weight of just 600 kilograms, the result is an aggressive car that races well in traffic and is a pure thrill ride to drive.

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!

dallara

CHASSIS

CARBON FIBRE
ALUMINUM
CONSTRUCTION

LENGTH	WIDTH	WHEELBASE	DRY WEIGHT	WET WEIGHT WITH DRIVER
4550mm 179.1in	2180mm 85.8in	3050mm 120in	600kg 1323lbs	716kg 1579lbs

POWER UNIT

3.0 LITER V10

DISPLACEMENT	RPM LIMIT	TORQUE	POWER
3.0Liters 183CID	20000RPM	246lb-ft 333Nm	900bhp 671kW

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.

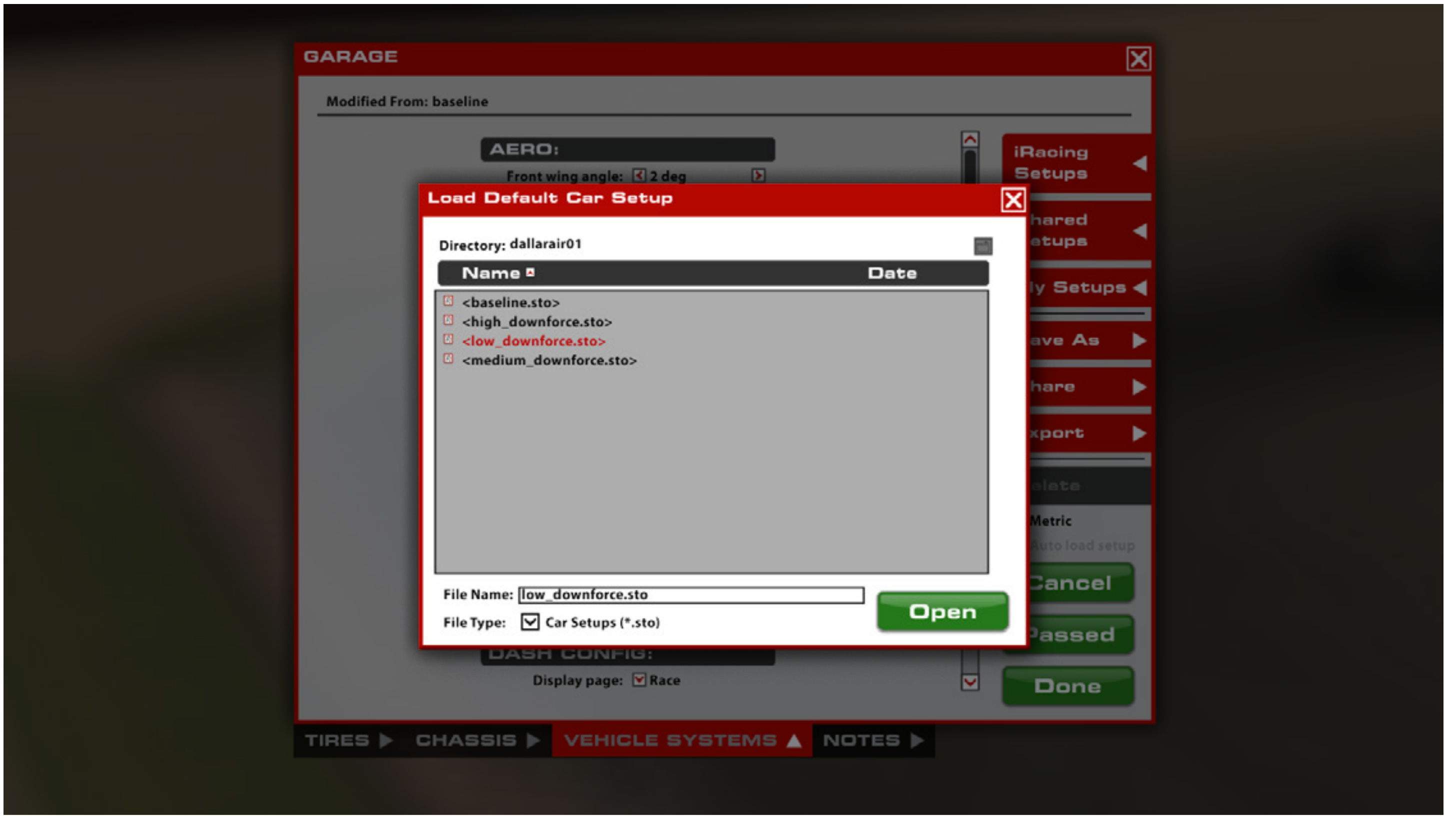
Before diving into chassis adjustments, though, it is best to become familiar with the car and track. To that end, we have provided baseline setups for each track commonly raced by these cars. To access the baseline setups, simply open the Garage, click iRacing Setups, and select the appropriate setup 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

The IR-01 is very easy to use, but extremely difficult to master. Once the car is loaded, simply turn on the ignition, press the starter button, and wait for the dash to change to the Race page. Leaving the pits is as simple as pressing “upshift” to put the car in gear, and hitting the accelerator pedal. Once in motion, the IR-01 does not require a clutch or throttle blips to change gear either up or down. Upshifting is recommended around 19,200rpm.

LOADING AN iRACING SETUP



Upon loading into a session, the IR-01 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

"RACE" PAGE

LEFT CLUSTER

RPM	Engine RPM
SPEED	Vehicle Speed (MPH or KPH, depending on selected units)
BRAKE BALANCE	% Front brake bias
PEDAL	Currently selected throttle map setting
FARB	Current Front Anti-Roll Bar blade setting
RARB	Current Rear Anti-Roll Bar blade setting

RIGHT CLUSTER

LAP TIME	Current Lap Time
GAIN/LOSS	Time difference to session best lap
FUEL REMAINING	Fuel level in the car (Gallons or Liters, depending on selected units)

BOTTOM ROW

LAP	Laps completed in current outing
VOLT	Current voltage measured at the battery
WATER TEMP	Engine water temperature (°C or °F)
OIL TEMP	Engine oil temperature (°C or °F)

“QUAL“ PAGE

LEFT CLUSTER

RPM	Engine RPM
SPEED	Vehicle Speed (MPH or KPH, depending on selected units)
BRAKE BALANCE	% Front brake bias
PEDAL	Currently selected throttle map setting
FARB	Current Front Anti-Roll Bar blade setting
RARB	Current Rear Anti-Roll Bar blade setting

RIGHT CLUSTER

LAP TIME	Current Lap Time
GAIN/LOSS	Time difference to session best lap
FUEL REMAINING	Fuel level in the car (Gallons or Liters, depending on selected units)

BOTTOM ROW

TIRE TEMP	Current surface temperature for each tire (°C or °F)
TIRE PRESS	Current tire pressure for each tire (psi or kPa)

DISPLAY NOTIFICATIONS

There are several warnings that will come up on the display. The top two lights on the left and right side are wheel lock indicators that will indicate that one of the tires is sliding through the braking zone. The display will flash red when oil or water temp exceed their limits of 100 C, and it will flash red when there are 3 laps of fuel left in the tank. The pit limiter will make the screen turn blue and the lights on the side will flash. When water or oil pressure is lost, a message will show up on the bottom line of the screen indicating what the problem is. The display will also turn red in that case.

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 COMPOUND

TIRE COMPOUND

The IR-01 can run on one of three tire compounds, each with their own advantages and disadvantages. Soft tires will have the most grip and lower lap times, but will wear quickly. Hard tires will last much longer, but will have the least grip and slower lap times. Medium tires are a balance of the two, with a moderate level of grip and a lifespan that falls between the Soft and Hard tires.

TIRE SETTINGS (ALL FOUR TIRES)

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 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. The tire pressures will flash on the display until they reach 21 psi. At this point the tires build heat slower as they “settle in” for the long run.

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.

TIRE TEMPERATURES

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.

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.

Chassis

The Dallara IR-01 features a simplified suspension design which forgoes dedicated springs for each corner of the car, as you would see in a road car or most other race cars. Instead, heave (pitch) and roll are handled independently via front and rear Heave Springs and Anti-Roll Bars, respectively. Aerodynamic performance can be tuned via the Heave Springs to maintain an efficient aerodynamic platform, while the chassis roll and overall mechanical balance can be tuned via the Anti-Roll Bars.

FRONT

ARB STIFFNESS

The ARB (Anti-Roll Bar) stiffness setting adjusts the roll stiffness of the front suspension via a change in the ARB's diameter. Increasing the ARB stiffness 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 ARB stiffness 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.

ARB BLADES

The configuration of the Anti-Roll Bar arms, or "blades", can be changed to alter the overall stiffness of the ARB assembly. Higher values transfer more force through the arms to the ARB itself, increasing roll stiffness in the front suspension and producing the same effects, albeit on a smaller scale, as increasing the diameter of the sway bar. Conversely, lower values reduce the roll stiffness of the front suspension and produce the same effects as decreasing the diameter of the sway bar. These blade adjustments can be thought of as fine-tuning adjustments between sway bar diameter settings.

PUSHROD DELTA

Changing the Pushrod Delta results in a change in overall length of the front suspension pushrods, directly affecting the front-end ride height. Increasing the Pushrod Delta will raise the front end and decreasing the Pushrod Delta will lower the front end. Due to the car's mono-shock design, this adjustment changes both front pushrods equally and prevents any crossweight changes. This adjustment can be used to alter the ride heights without affecting the heave spring preload.

NOSE WEIGHT

The vehicle's Nose Weight is the percentage of the vehicle's 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.

SPRING PERCH OFFSET

This changes the static load of the front heave spring via an adjustable spring perch. This is used to alter the overall front end ride height as well as the static deflection and preload in the front Heave Spring.

SPRING RATE

The Heave Spring is a spring element configured to provide resistance only in vertical suspension movement without affecting roll stiffness. This spring element is used to control increasing aerodynamic loads and helps to maintain the proper aerodynamic attitude around a circuit. Higher spring rates will increase the front suspension's vertical stiffness, useful for maintaining a low front ride height but can cause a loss of grip in the front end over bumpy surfaces. Softer spring rates will result in more front end travel, reducing the control over the aerodynamic attitude, but will result in better front-end mechanical grip.

SPRING DEFLECTION

This displays how much the Heave Spring is compressed from its total length under static loads in the garage.

BUMP STIFFNESS

Bump stiffness affects how resistant the shock is to compression (reduction in length). This adjustments affect only vertical (heave) movements in the suspension, and are useful in fine-tuning the aerodynamic platform around the track. Increasing values will produce more resistance to compression (reduction in front ride height), while lower values will allow the front end to compress more easily.

REBOUND STIFFNESS

Rebound stiffness affects how resistant the shock is to extension (increase in length). Working only in heave, increasing the front rebound can help to control unwanted vertical oscillations in ride height. If the suspension is not allowed to work over changes in load, such as when rebound is too high, the front tires will see a loss in grip over bumpy surfaces.

CORNERS (ALL FOUR SECTIONS)

CORNER WEIGHT

This displays the weight on each wheel while sitting in the garage under static conditions. Useful for determining weight distribution.

RIDE HEIGHT

Chassis Ride Height is the distance from the ground to a reference point on the bottom of the chassis.

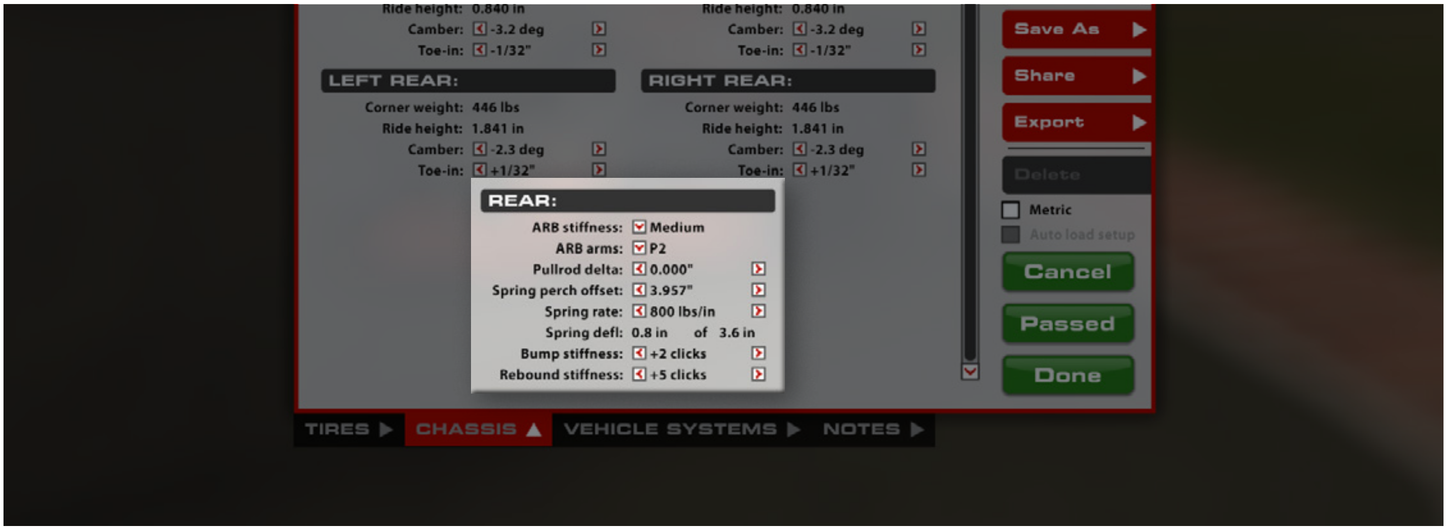
CAMBER

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

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 will increase slip in the inside tire while adding toe-in will reduce the slip. This can be used to increase straight-line stability and turn-in responsiveness with toe-out. Toe-in at the front will reduce turn-in responsiveness but will reduce temperature buildup in the front tires.

REAR



ARB STIFFNESS

The ARB (Anti-Roll Bar) stiffness setting adjusts the roll stiffness of the rear suspension via a change in the ARB's diameter. Increasing the ARB stiffness will increase the roll stiffness of the rear suspension, resulting in less body roll but increasing mechanical oversteer. Conversely, reducing the ARB stiffness will soften the suspension in roll, increasing body roll but decreasing mechanical oversteer. This can result in a less-responsive feel from the steering, but grip across the rear axle will increase.

ARB BLADES

The configuration of the Anti-Roll Bar arms, or "blades", can be changed to alter the overall stiffness of the ARB assembly. Higher values transfer more force through the arms to the ARB itself, increasing roll stiffness in the rear suspension and producing the same effects, albeit on a smaller scale, as increasing the diameter of the sway bar. Conversely, lower values reduce the roll stiffness of the rear suspension and produce the same effects as decreasing the diameter of the sway bar. These blade adjustments can be thought of as fine-tuning adjustments between sway bar diameter settings.

PULLROD DELTA

Changing the Pullrod Delta results in a change in overall length of the rear suspension pullrods, directly affecting the rear-end ride height. Increasing the Pullrod Delta will lower the rear end and decreasing the Pullrod Delta will raise the front end. Due to the car's mono-shock design, this adjustment changes both rear pullrods equally and prevents any crossweight changes. This adjustment can be used to alter the ride heights without affecting the rear heave spring preload.

SPRING PERCH OFFSET

This changes the static load of the rear heave spring via an adjustable spring perch. This is used to alter the overall rear end ride height as well as the static deflection and preload in the rear Heave Spring.

SPRING RATE

The Heave Spring is a spring element configured to provide resistance only in vertical suspension movement without affecting roll stiffness. This spring element is used to control increasing aerodynamic loads and helps to maintain the proper aerodynamic attitude around a circuit. Higher spring rates will increase the rear suspension's vertical stiffness, useful for maintaining a consistent rear ride height but can cause a loss of grip in the rear end over bumpy surfaces. Softer spring rates will result in more rear end travel, reducing the control over the aerodynamic attitude, but will result in better rear-end mechanical grip.

SPRING DEFLECTION

This displays how much the Heave Spring is compressed from its total length under static loads in the garage.

BUMP STIFFNESS

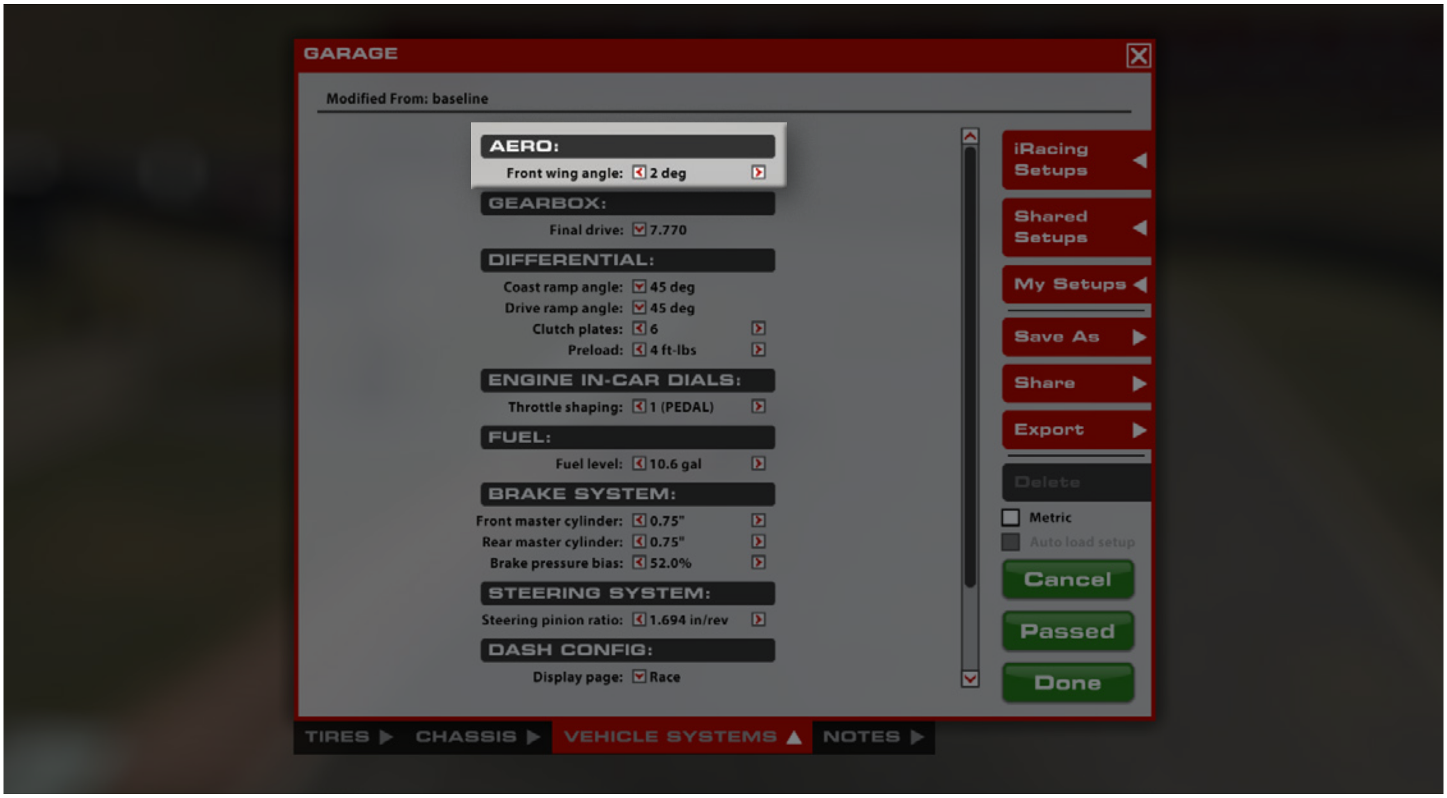
Bump stiffness affects how resistant the shock is to compression (reduction in length). This adjustment affects only vertical (heave) movements in the suspension, and are useful in fine-tuning the aerodynamic platform around the track. Increasing values will produce more resistance to compression, while lower values will allow the rear end to compress more easily.

REBOUND STIFFNESS

Rebound stiffness affects how resistant the shock is to extension (increase in length). Working only in heave, increasing the rear rebound can help to control unwanted vertical oscillations in ride height. If the suspension is not allowed to work over changes in load, such as when rebound is too high, the rear tires will see a loss in grip over bumpy surfaces.

Vehicle Systems

AERO



FRONT WING ANGLE

The Front Wing Angle setting changes the Angle of Attack of the front wing elements. Increasing wing angle increases the downforce generated by the wing but increases drag, while decreasing the wing angle reduces the downforce generated by the wing while reducing drag. Front Wing Angle has a heavy influence on front downforce, having a large effect on front-end grip in mid- to high-speed corners.

GEARBOX

FINAL DRIVE

The final drive ratio alters the vehicle's top speed and acceleration, with lower values producing a higher overall top speed with slower acceleration and higher values reducing the vehicle's top speed but providing better acceleration.

DIFFERENTIAL

COAST RAMP ANGLE

Differential ramp angles alter how much force is produced to keep the differential locked. Coast Ramp Angles affect the differential under deceleration, with higher numbers generating less locking force and lower numbers generating more locking force. Higher locking force will generate more understeer under deceleration.

DRIVE RAMP ANGLE

Differential ramp angles alter how much force is produced to keep the differential locked. Drive Ramp Angles affect the differential under acceleration, with higher numbers generating less locking force and lower numbers generating more locking force. Higher locking force will generate more understeer but will help with traction out of a corner.

CLUTCH PLATES

The number of clutch faces affect how much overall force is applied to keep the differential locked. Treated as a multiplier, adding more faces produces increasingly more locking force.

PRELOAD

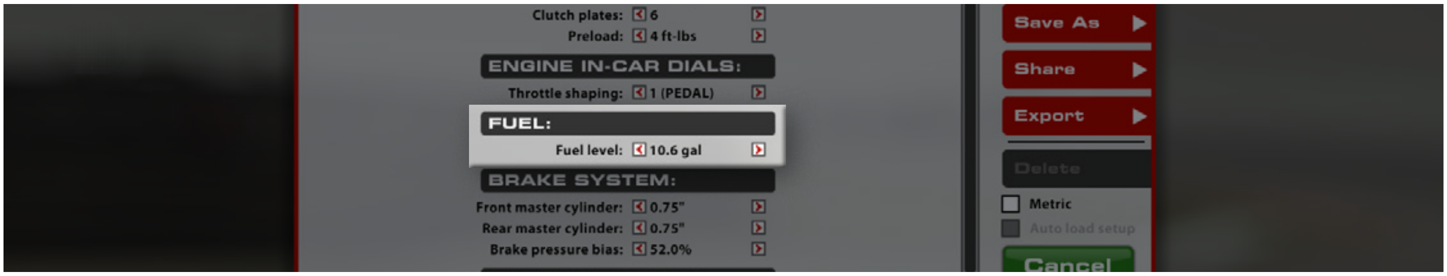
The differential can be set with a static preload applied to the friction surfaces. Higher values produce more locking force in the differential in all conditions, producing more understeer under acceleration and deceleration. This value will also affect mid-corner performance, with higher values not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

ENGINE IN-CAR DIALS

THROTTLE SHAPING

Throttle Shape controls the torque mapping of the throttle pedal. Setting 1 has an S-shaped torque map with lower torque increase at low throttle inputs but rapidly increasing torque with increasing throttle input. Setting 3 is a linear torque map, with each percent increase in throttle application providing an equal amount of torque increase from the engine. Setting 2 is a torque map that is more linear than Setting 1, but more S-curved than Setting 3. This setting is adjustable from the In-Car Adjustments black-box via the PEDAL setting.

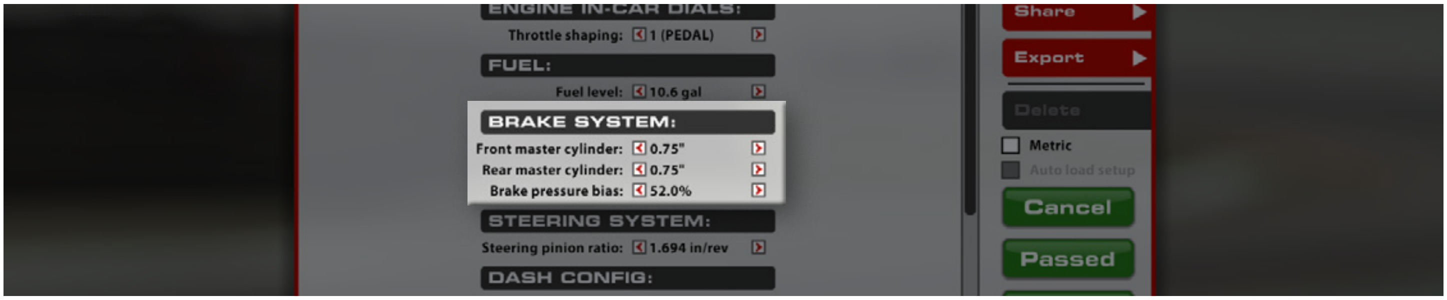
FUEL



FUEL LEVEL

Fuel level is the amount of fuel in the fuel tank when the car leaves the garage.\

BRAKE SYSTEM



FRONT MASTER CYLINDER

The Front Brake Master Cylinder size can be changed to alter the pressure in the lines to the front brake calipers. A larger master cylinder will reduce the pressure to the front brakes, shifting brake bias rearward and producing a "softer" brake feel. A smaller master cylinder will increase brake line pressure to the front brakes, shifting brake bias forward and providing a more aggressive feel in the brake pedal.

REAR MASTER CYLINDER

The Rear Brake Master Cylinder size can be changed to alter the pressure in the lines to the rear brake calipers. A larger master cylinder will reduce the pressure to the rear brakes, shifting brake bias forward and producing a "softer" brake feel. A smaller master cylinder will increase brake line pressure to the rear brakes, shifting brake bias rearward and providing a more aggressive feel in the brake pedal.

BRAKE PRESSURE BIAS

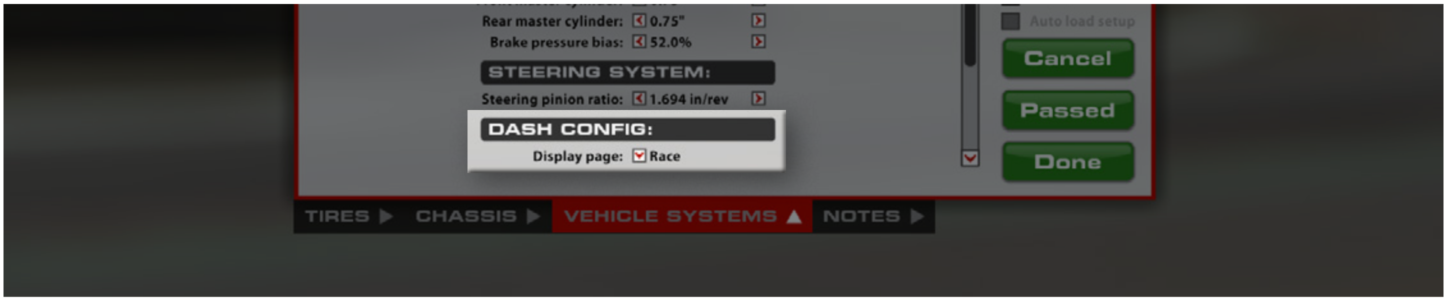
Brake Bias is the percentage of braking force that is being sent to the front brakes. Values above 50% result in more pressure being sent to the front, while values less than 50% send more force to the rear. This should be tuned for both driver preference and track conditions to get the optimum braking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

STEERING SYSTEM

STEERING PINION RATIO

The size of the steering pinion can be changed to alter how fast or slow the steering feels to the driver. The value represents the amount of steering rack movement for a single revolution of the steering pinion, with larger values resulting in a faster steering feel.

DASH CONFIG



DISPLAY PAGE

Sets the default display page on the steering wheel when the car is loaded.