

Installation

System requirements::

3ds Max versions: 2008, 2009, 2010, 2011, all 32 or 64 bit

3ds Max Design : all

OS: Windows XP, Windows Vista, Windows 7, all 32 and 64 bit

User must have local administrator rights with Windows XP to use MadCard.

on Windows 7 administrator right needed only during installation

Tire marks require V-Ray

Users are provided with the same installation file for both Workstation and Render node

MadCard_WS.exe

Workstation can be used only when license is properly installed, and provides access to all *MadCar* options.

If *MadCar* does not find license file it switches itself to Render node and only can renders files created with *MadCar Workstation*. Rendering is available both locally and over network.

To install the program you need to run the *MadCar_WS.exe* with the administrator rights.

Registration

Start the *MadCarRegistration32x.exe* or *MadCarRegistration64x.exe* utility (for 32-bit or 64-bit systems accordingly)

Choose the hard disk to be linked with the *MadCar* license (linking with external USB storage, Flash drives and network drives is not supported).

Click the «Get Your ID File» button and save *.id file on your hard disk under any name you like.

Send this file to mail@rendering.ru (or your reseller). In the nearest time (usually within 24 hours) you will get an email from us (or your reseller) with *.key license file attached. Save this file on your hard disk. Start again *MadCarRegistrationXXx.exe* utility and press the «Apply Key File» button.

In the dialogue box select the *.key file you received from us. With this registration procedure is over.

In case of license malfunction and errors (which can be caused by disk formatting, reinstallation of the operating system or components replacement) you are free to address the developer at any time. Please make sure you download latest version from our forum and generate new *.ID file. Send it to mail@rendering.ru to get your updated *.Key file

However, in case of total replacement of a PC new license is not provided more often than once in half a year.

ATTENTION! Please always try to email from the same email address you used when you purchased the plug-in. If we can't find your e-mail address from which you sent the ID file in our database and there is no explanation and receipt or order number in you email, your request may not be processed!

Please always attach you receipt or order number to avoid any delays in communication.

Once installed MadCar can be created from:
Create>Helpers>MadCar:

Plug-in includes the following object types:



Chassis is for car frame.

Suspension is for damper.

Wheel is for car wheel.

MadCar is managing skin.

Start Position sets the initial position of the car.

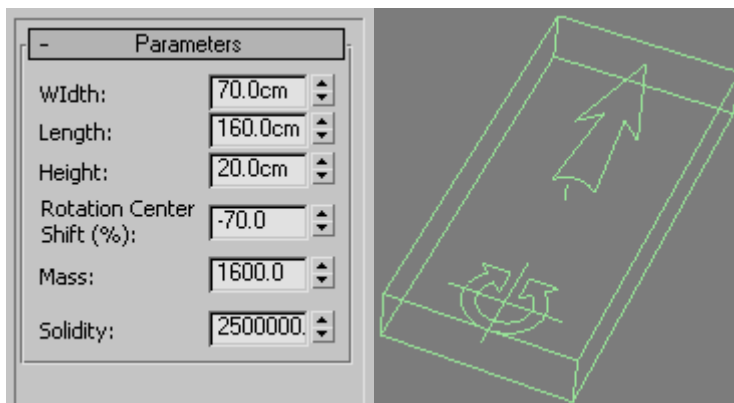
Trailer Hitch and Trailer Tongue object to connect the two vehicles.

Do not scale and mirror these objects. Only rotation and movement is acceptable.

All objects are linkable with geometry

Chassis can be linked with geometry of car frame. **Suspension** can be linked with geometry of brake blocks and suspension mount parts. **Wheel** can be linked with wheel geometry.

Chassis



Chassis sets the overall dimensions of the car, its mass and solidity at sudden wheels collision with surface.

Width equals to half width of a car.

Length equals to half length of a car.

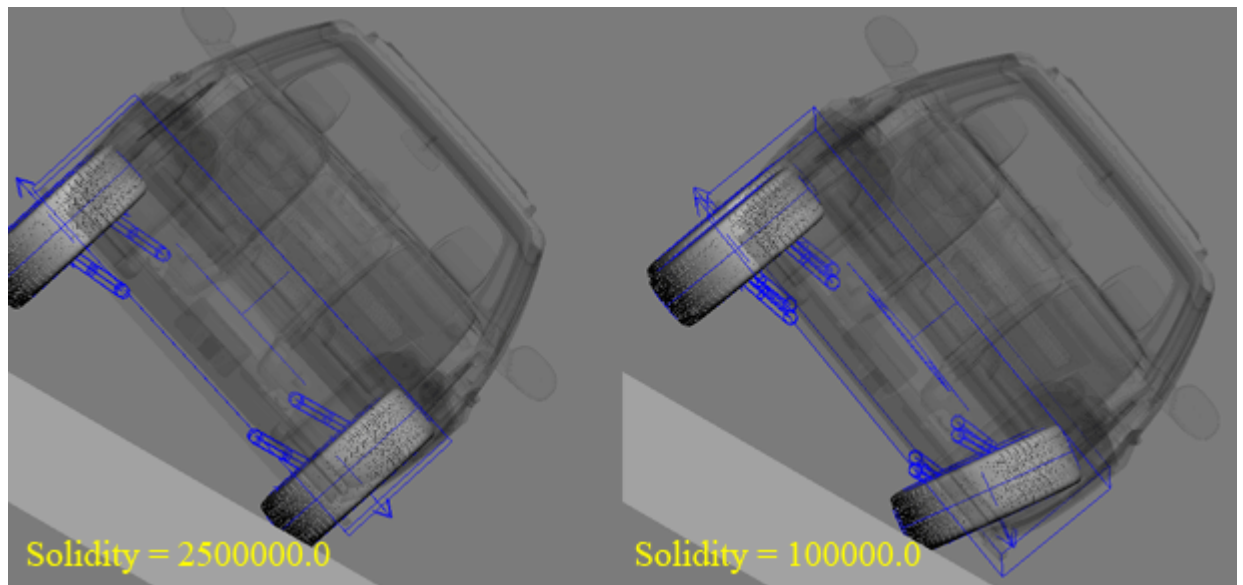
Height equals to half height of a car.

Mass is the car mass in kilograms.

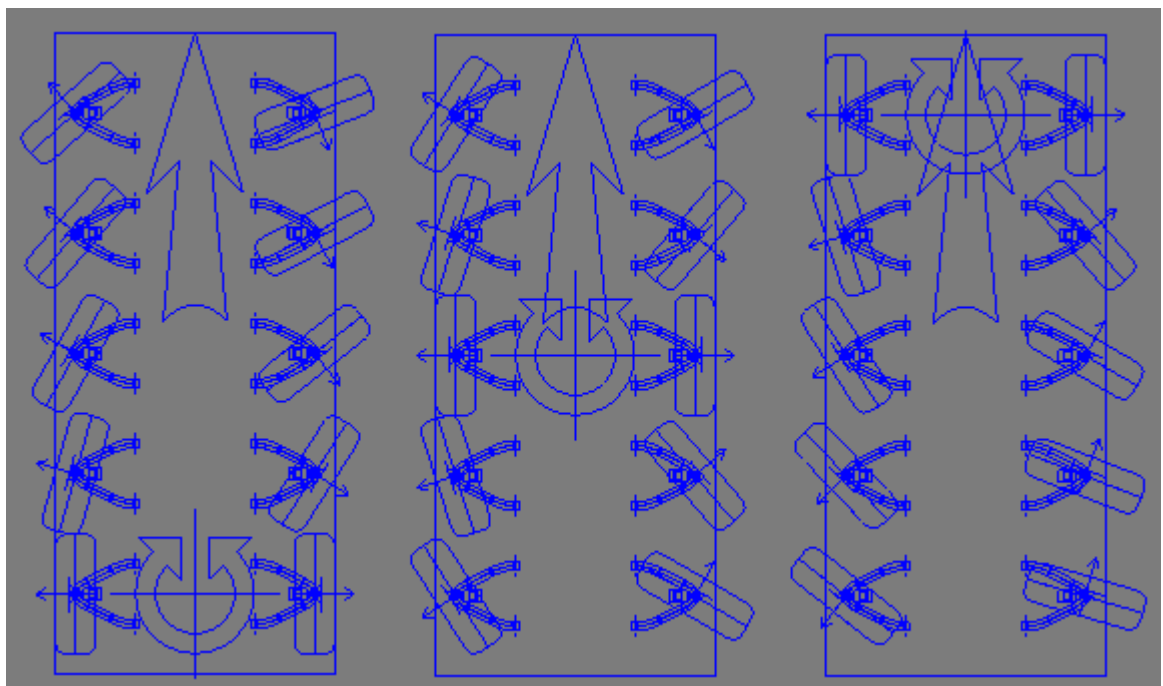
Solidity is the car's structural stiffness.

Mass value determines car's reactivity/inertness. The heavier it is, the stronger the suspension sags, and slower the car accelerates and stops.

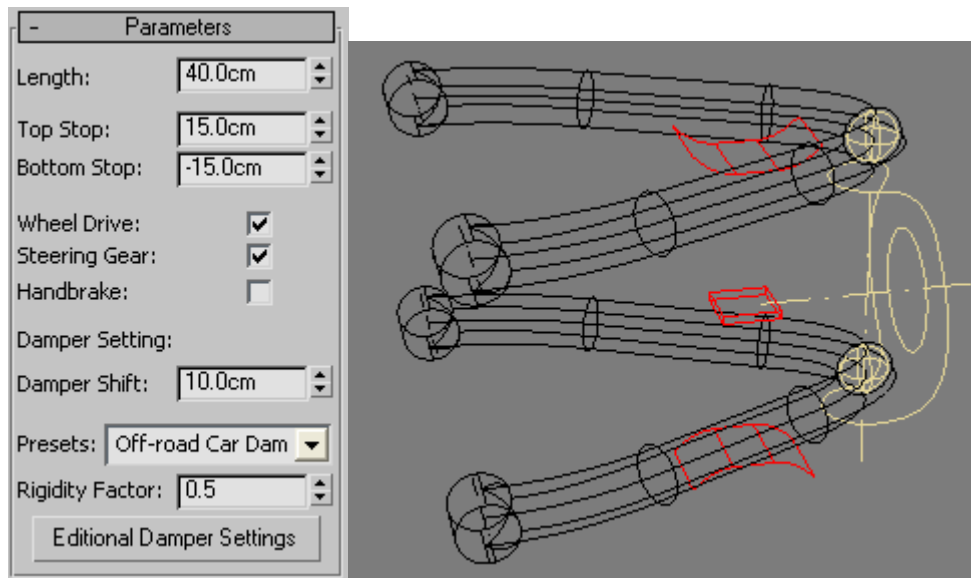
Solidity sets deformation resistance. At sudden collision of wheels with surface wheel axes can bend and diverge from the initial position. Divergence is less at high solidity.



Position of the rotation axis affects the behavior of steering wheels. Below are examples for the values of -75%, 0%, 75%.

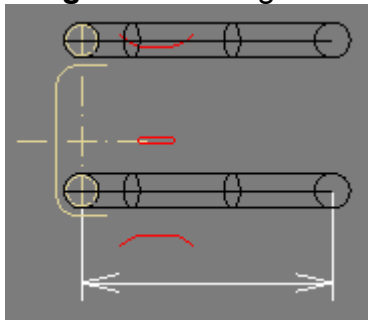


Suspension



Suspension section controls car suspension settings such as length of crossover suspension links, spring rigidity, oil damping, buffer gas tension, suspension block limits, Engine drive, steering and other settings.

Length is the length of crossover suspension link.



Top Stop and **Bottom Stop** are the top and bottom suspension block stops



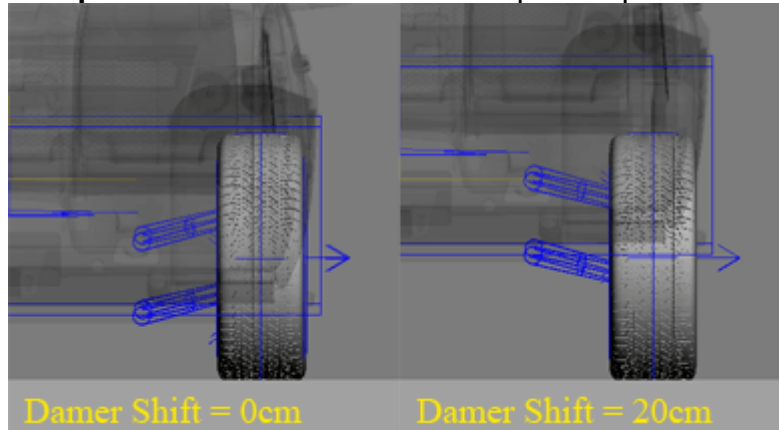
Wheel Drive is engine drive.

Steering Gear is steering linkage. Wheels will turn when the steering wheel turn.
Handbrake sets the wheel locking with the handbrake.

Damper settings

Plug-in presents a model of gas-oil damper.

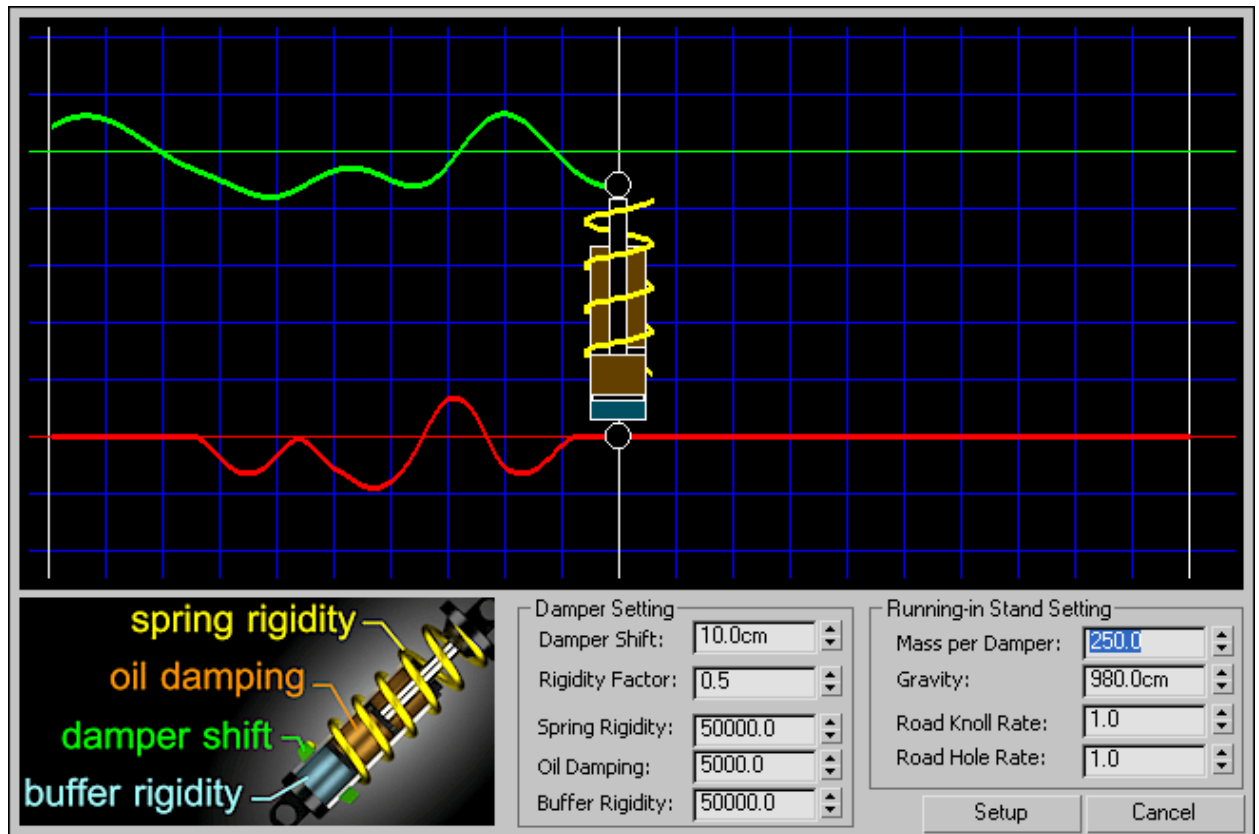
Damper shift is the shift of the damper's top holder.



Presets help making quick setup without deep knowledge on damper functioning – you have an opportunity of selecting the preset damper parameters.

Rigidity Factor lets you correct the resulting damper resistance value without fixing multiple parameters one by one. In most cases using these settings is enough for regulation.

Additional Damper Settings are for detailed setup of damper parameters. These settings are intended for advanced users with ability of fine-tuning of damper parameters.



Running-in (test) system generates road irregularities in real-time mode and displays damper response to them.

Damper Settings are damper parameters.

Spring Rigidity is spring stiffness.

Oil Damping is oil resistance.

Buffer Rigidity is buffer stiffness.

Running-in Stand Setting are the parameters of test stand.

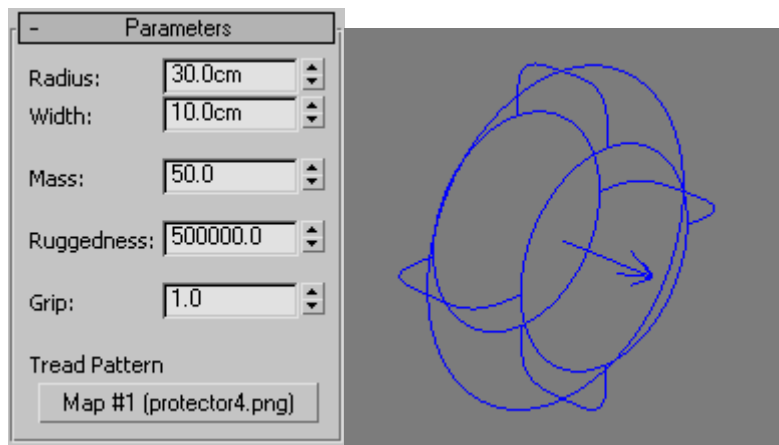
Mass per Damper: it is the mass which falls on the damper. For example, if the car with 4 wheels has the mass of 1000kgs, then 250kgs will fall on each damper.

Gravity: it is the acceleration of free fall/ gravity factor. It is presented in centimeters – 980cm/s^2 , meters - 9.8m/s^2 or inches - 386"/s^2 .

Road Knoll Rate is the frequency of knolls spread upon the road.

Road Hole Rate is the frequency of holes spread upon the road.

Wheel



Wheel section sets the dimensions and properties of wheels.

Radius is the wheel's radius.

Width is the wheel's width.

Mass is the wheel's mass set in kilograms.

Ruggedness is the wheel's stiffness. The less the ruggedness, the deeper the wheel's elastic deformation upon surface.

Grip is the constant of surface friction. The greater the constant of friction, the less the car skidding, but with that the chances of rollover at tight turns are higher.

At the installation of wheel make sure the arrow of wheel points to outside direction, not inside the car.

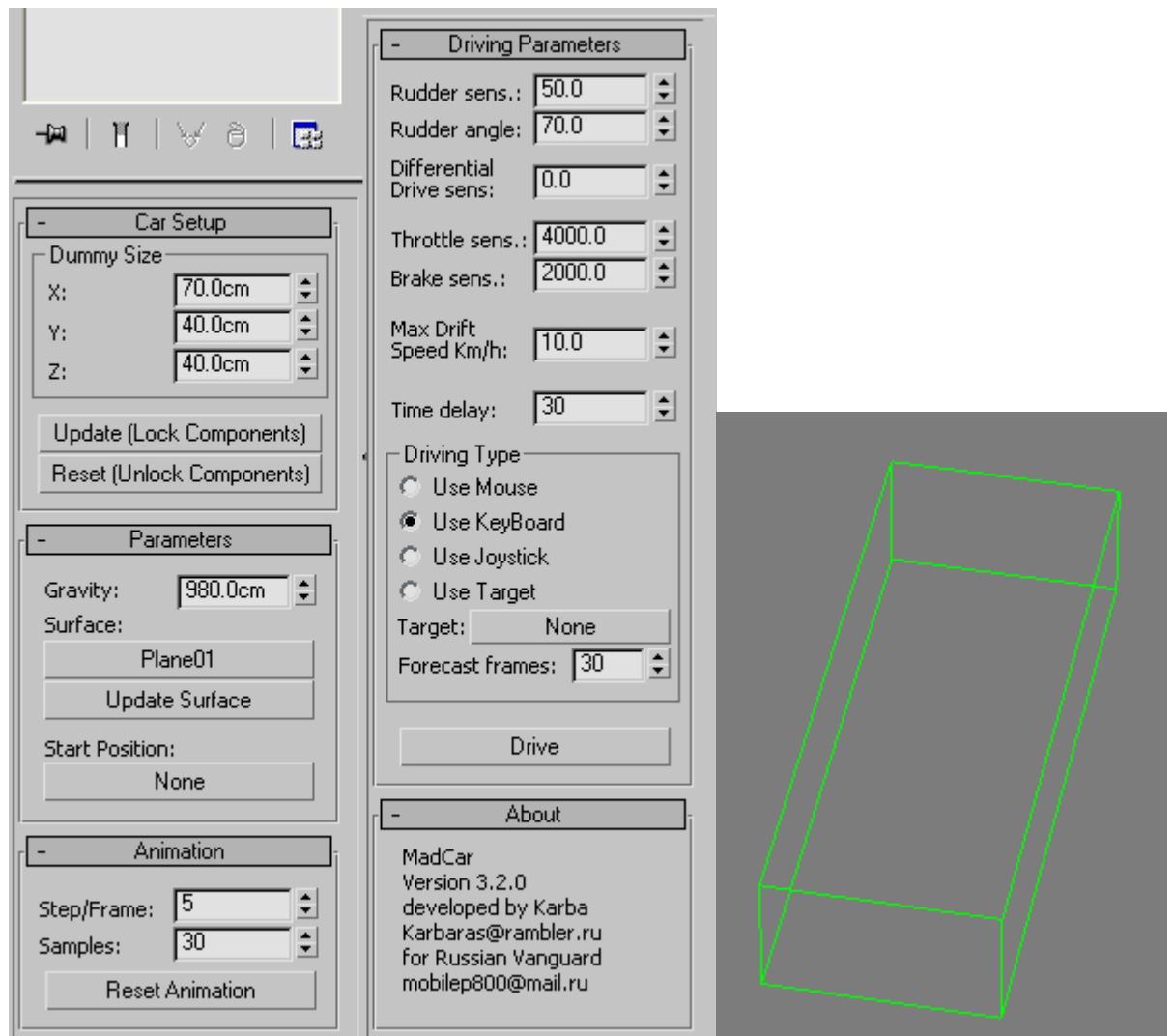
Tread Pattern – tire mark. Used to generate textures of tire marks. An example of the orientation of the tread.



When setting a wheel the wheel arrow must point outside and not inside the car.

MadCar

This object represents the skin combining all car components into one integral unit.

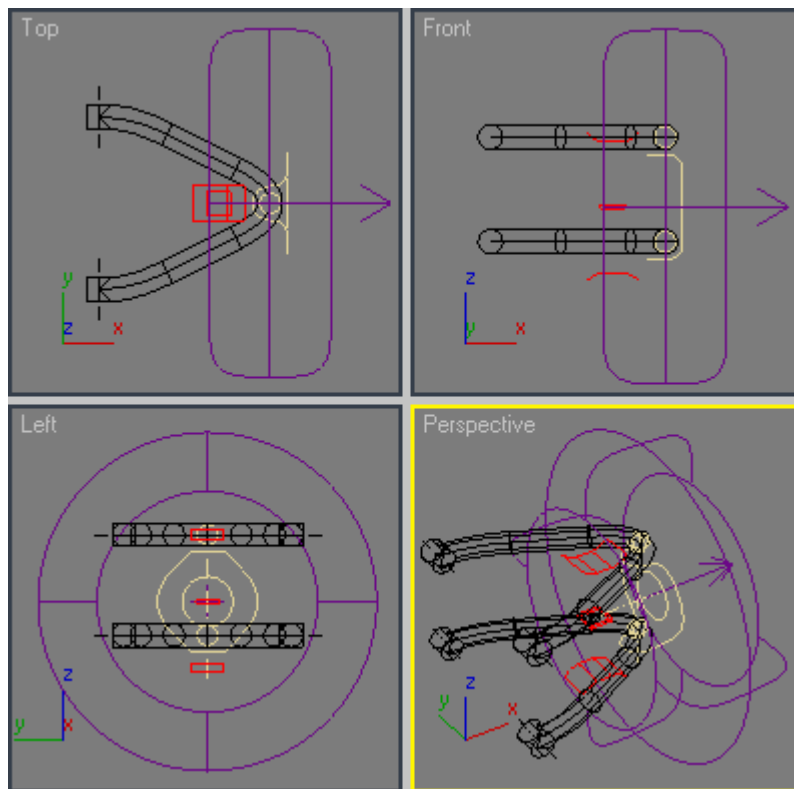


Car Setup is the car's assembly into one unit.

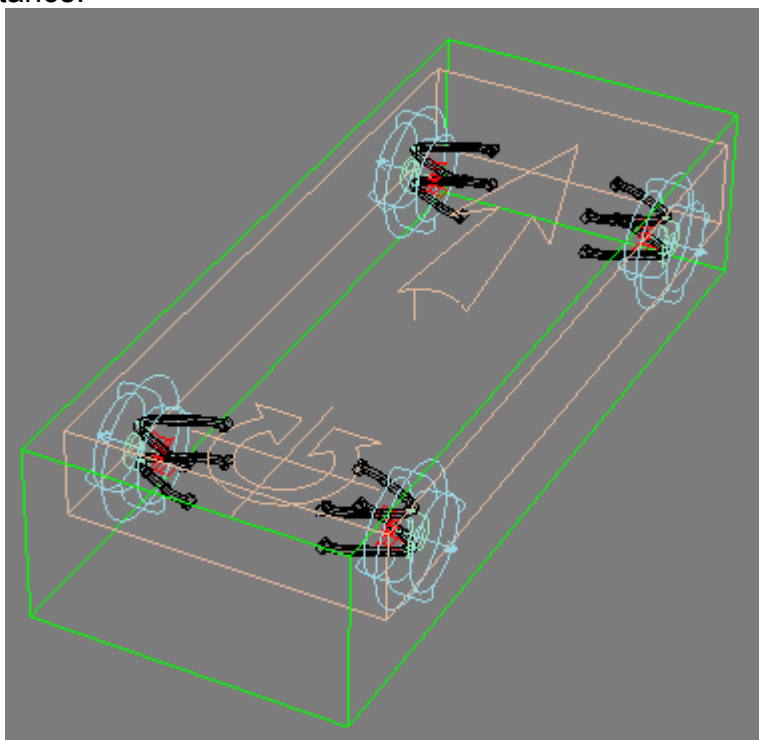
Dummy Size sets the skin's size.

All components occurred inside the skin will be automatically applied.

For the assembly of the car there should be one **chassis** object inside the skin together with the equal number of **wheel** and **suspension** objects. Each pair of suspension and wheel should have equal position as it shown below:

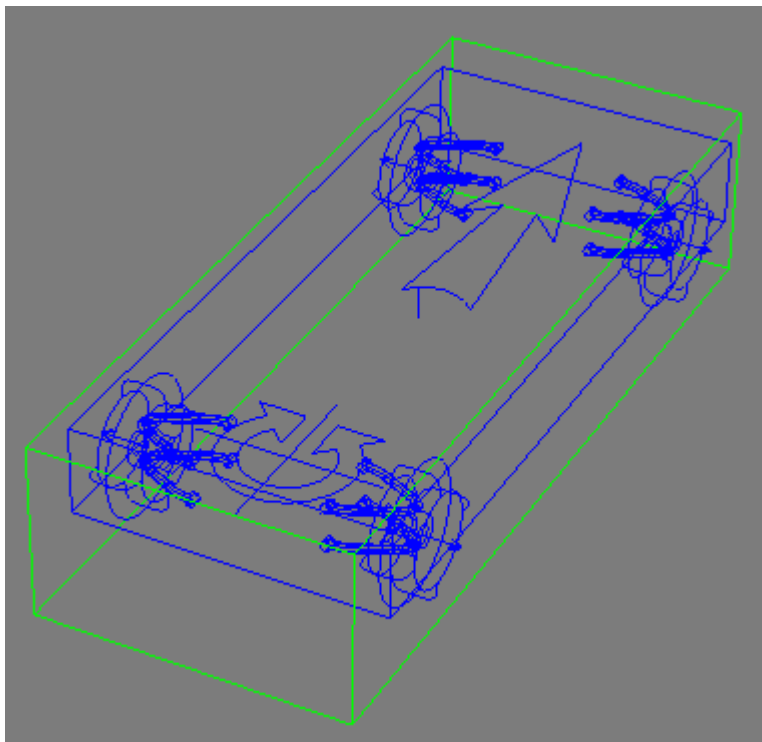


Locate all the car components according to the needed configuration. As below, for instance:



Then press **Update (Lock Component)**

In case of successful assembly the components should be locked (it will be impossible to move them) and blue colored as shown below. After that any changes to the components will not affect the whole unit. To update the parameters you need to press **Update (Lock Component)** once again.



If you want to unlock the components and change their location press **Reset (Unlock Component)**.

Parameters

Parameters are general parameters.

Gravity is the acceleration of free fall/ gravity factor. It is presented in centimeters – 980cm/s^2 , meters - 9.8m/s^2 or inches - 386"/s^2 .

Surface is the object of surface upon which the car will be moved. After the selection and changing of object and loading of the scene **it is necessary to press Update Surface**. It is connected with the algorithm of wheel interaction with the ground, this algorithm uses **ray-trace accelerator** which reasonably speeds up the counting process and makes counting time almost independent on the number of polygons within the surface.

Start Position defines the object location of which will be the starting position of the car. If the object is selected, then after pressing **Update (Lock Component)** the car will be replaced automatically to the starting position.

Animation

Animation includes counting and animation settings.

Step/Frame fixes the number of keys for the frame. High value of this setting improves accuracy of counting, but reduces the speed of counting; it also leads to the increase of the scene's size on HDD. Low value of this setting may lead to uneven running of wheels at high driving speed.

Samples fix the number of counted/imputed samples per step. High value of this setting improves accuracy of counting, but reduces the speed of counting.

Low values of the above settings may lead to wheels vibration and car sliding down the sloping surface being at rest with brakes on.

Driving Parameters

Driving Parameters are car driving settings.

Rudder Sensitivity is the response of steering wheel. Lower value makes the rudder less reactive. Fix this setting at low values to get smooth/slow turning of wheels, high values will lead to fast wheels turn.

Rudder Angle is the ultimate steering lock.

Differential Drive Sensitivity - multidirectional movement of the wheels when turning. E.g. when turning right, the right wheel will be spinning backward, left - forward.

Throttle Sensitivity is the response of accelerator pedal. The higher the value, the higher the impulse given to the driving-wheels.

Brake Sensitivity is the response of brake pedal. High value makes the braking more active/intense.

Time Delay is the time delay between frames, it is set in milliseconds. Time delay is necessary for the distinguishing of CPU time needed for the mouse and keyboard reaction. If the value is too small driving control may have late response or even be blocked. In this case time delay should be extended.

Driving Type is the type of driving control. The following variants are possible:

Mouse is driving control with the mouse. Mouse movements to the left or right direction make the wheels turn respectively. Mouse movements up and down correspond to acceleration and deceleration. Wheel's running forward throws into forward gear. Wheel's running backward throws into reverse gear. The mouse right button is responsible for handbrake.

Keyboard is driving control by means of keyboard. "**A**" key is for turn to the left. "**D**" key is for turn to the right. "**W**" key is for accelerator. "**S**" key is for brake. **SPACEBAR** is for handbrake. **PAGE UP** throws into forward gear. **PAGE DOWN** throws into reverse gear.

Joystick driving controls are: **4** is forward gear. **2** is reverse gear. **3** is handbrake.



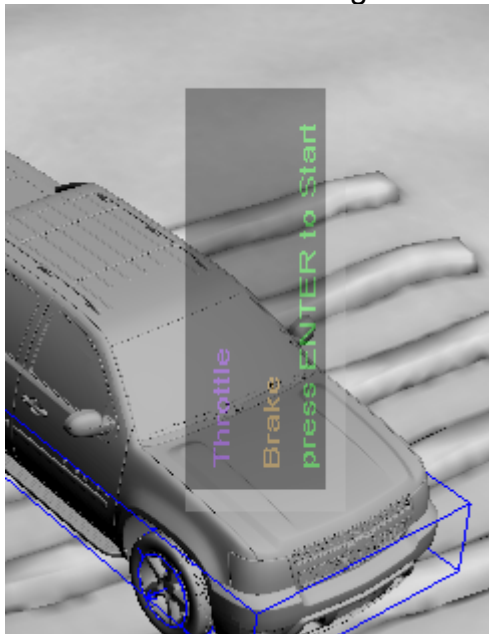
Steering Wheel driving controls: Gearbox handle is responsible for gear shifting (forward gear/reverse gear), marked button is for handbrake.



Target is a target object/ an object to follow. **Forecast frames** present the number of frames where the car foreshows the movement of object for the track calculation.

Drive.

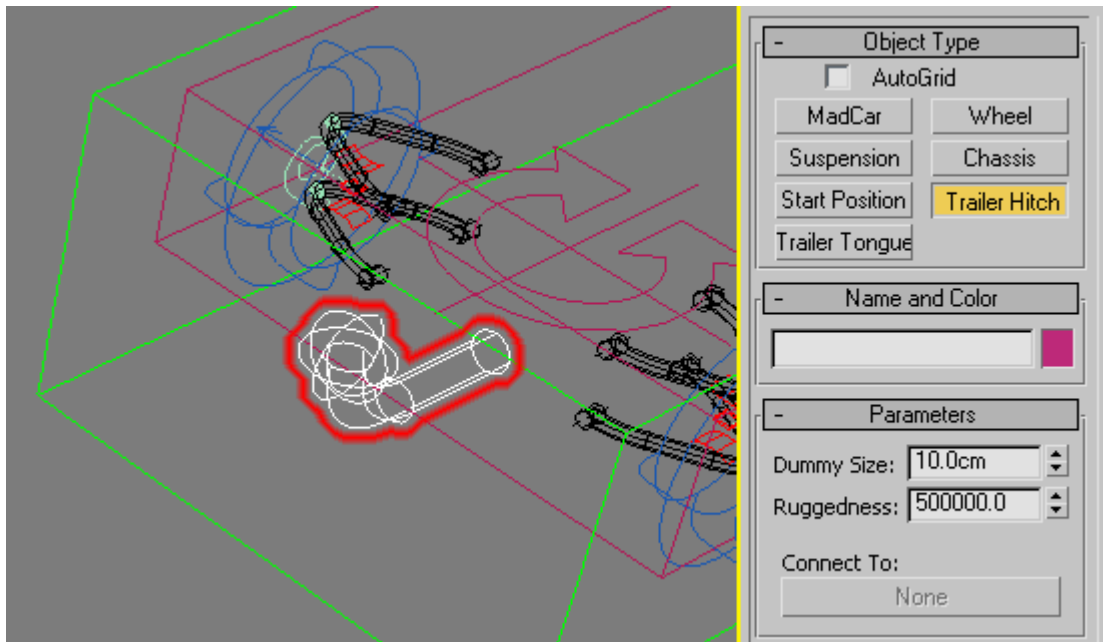
It activates the car driving window.



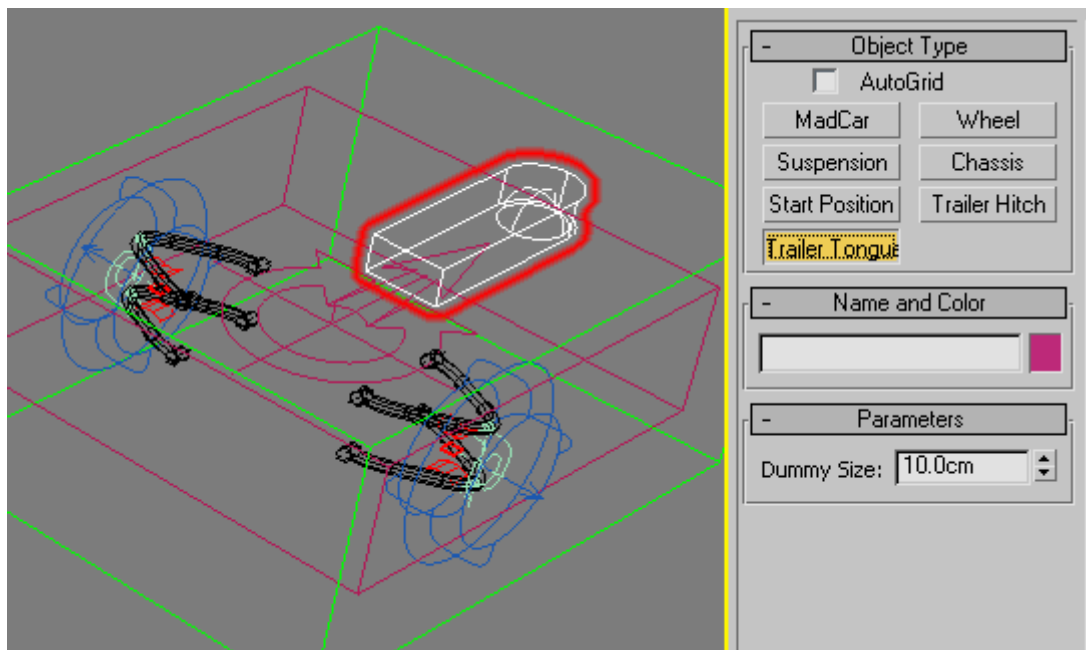
To start/stop driving press ENTER.

Trailers

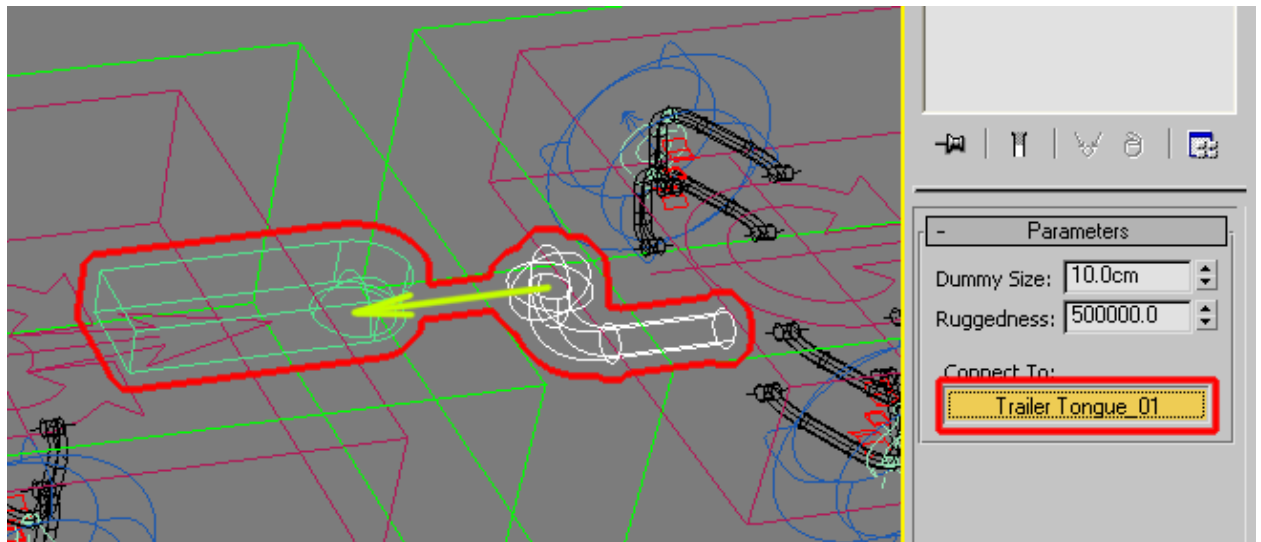
In order to join two vehicles add **Trailer Hitch** to the track in place where trailer will be attached.



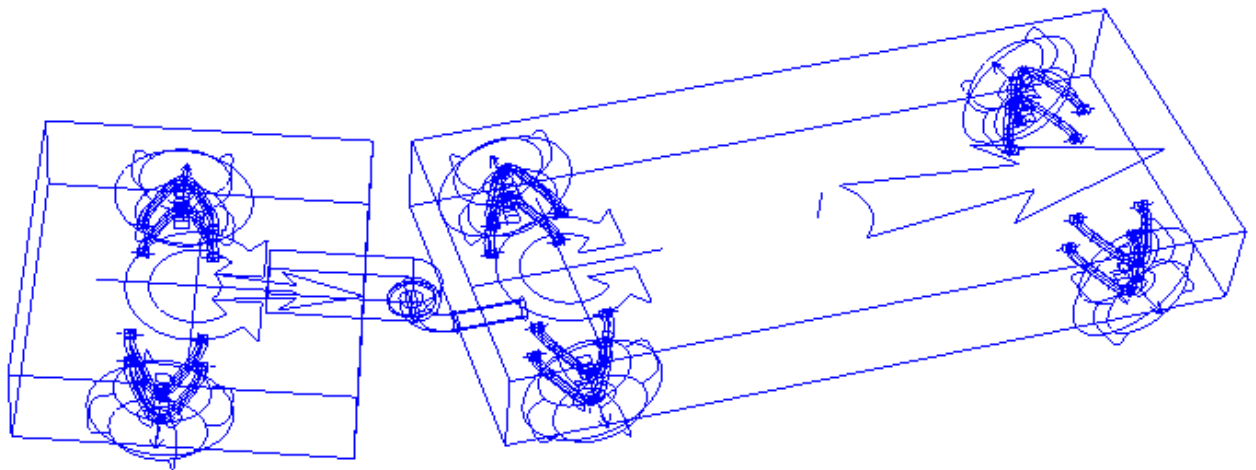
Add **Trailer Tongue** to the trailer in place where truck will be attached.



Join **Trailer Hitch** with **Trailer Tongue** as shown below



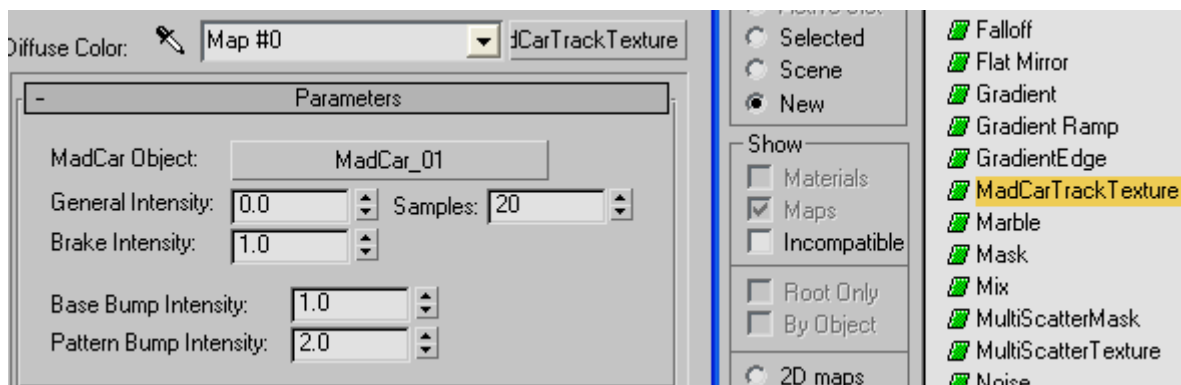
Vehicles are now joined.



From now on if you move the truck the trailer will follow it

Tire Marks (requires V-Ray).

MadCarTrackTexture. Is used for making tire marks.



MadCar Object - the MadCar object from which the texture generating traces.

General Intensity - the intensity of the traces in the normal movement of a vehicle.

Brake Intensity - the intensity of the traces when a wheel is slipping.

Samples - quality of marks. High values slow down the render.

Base Bump Intensity - total intensity of the bump.

Pattern Bump Intensity - bump value of the tire pattern.

Troubleshooting.

Possible license malfunction/errors.

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