CHASSISSIM
The Winner's Edge

ChassisSim – Creating and using templates.

ChassisSim templates are a very powerful way of organising information that pertains to your racecar and the various options you have available. To access these options you simply select the template on the right hand side, and then go to View->Toggle between lite and standard dialogs. This will bring up the appropriate choices of springs, bars, wings and geometry options.

The purpose of this document is to outline the files behind the template and how to go about constructing a template.

Template file structure

The ChassisSim template file structure is illustrated in Table 1. For convenience for the purpose of this illustration let us say the template we are working or creating is called Dallara F310.

The first step in starting to use ChassisSim is to understand what the various ChassisSim files are and what they actually do. To this end the following summary is presented in Table 1,

Table – 1 – ChassisSim files

File Type	File extension	Description
Def_Dallara F310	*.car	This is the base car file that pertains to this template. It is located in the ChassisSim directory
Car_Template	*.ini	This stores all the templates in the ChassisSim directory. It is located in the ChassisSim directory
Car_Dallara F310	*.ini	This is the file where all the choices for the particular car is stored.

Think of the ChassisSim template as having a car in the virtual garage. The car file is the car, the template is all the different spring, bar and geometry options you have in the garage/ race truck. The best way to use a template is to select the car file and then select File->Save As and save this as your specific setup. The when you start ChassisSim you simply select the car template and then use File -> Open to save the particular car file that pertains the setup you where working on.

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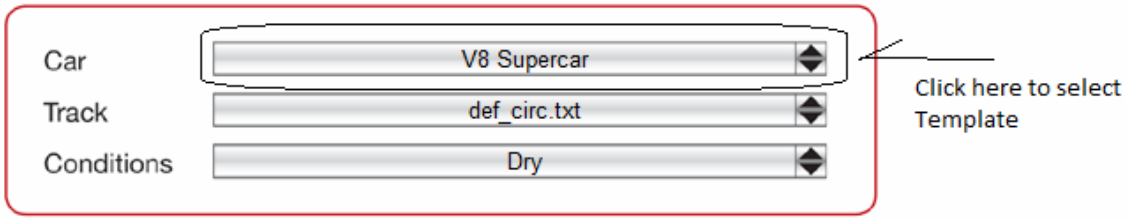
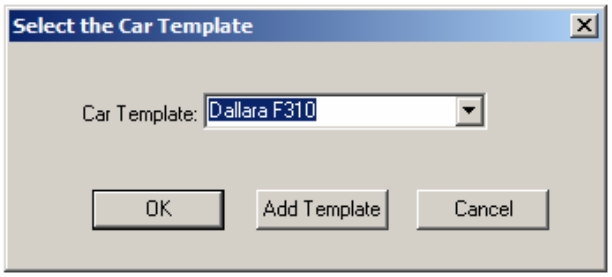
Selecting a Car template and creating one.

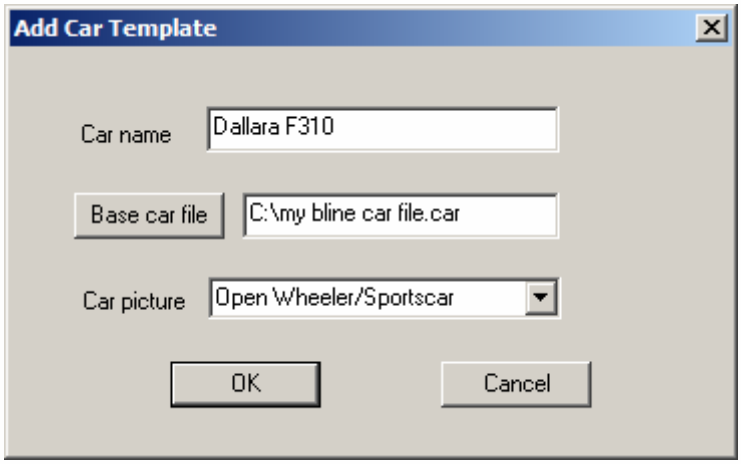
To select or create a car template simply click on the car drop down box on the right hand side of the screen. This process is illustrated below,



This will bring up this Dialog



To create a new template all you need to do is click on the Add template tab. This will bring up the following dialog,



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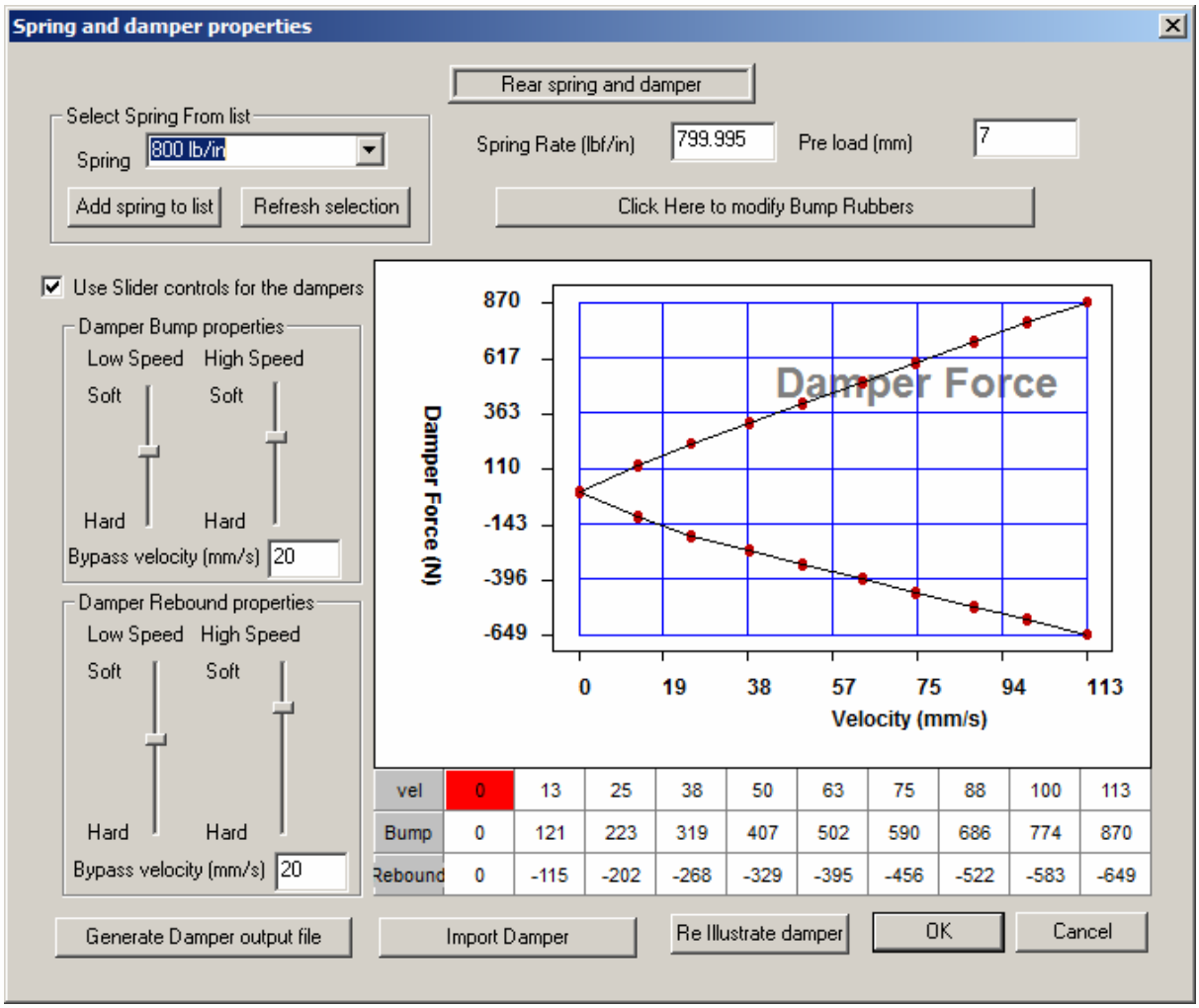
As you can see you enter the template name in Car Name, you select the baseline car file using the Base car file tab and you select the car file that you built up in the earlier guides. Lastly you select the picture to be associated with the template. Click on OK and OK in the main window.

To start adding to the template click on the Car drop down box and select your template. You are know ready to add to the template.

Adding Springs

To add a spring click on either the front and rear springs or the titles on the Right hand side of the screen. In lite mode this will display the following dialog,



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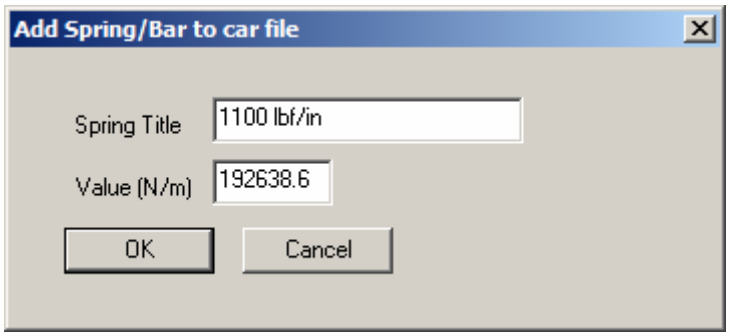
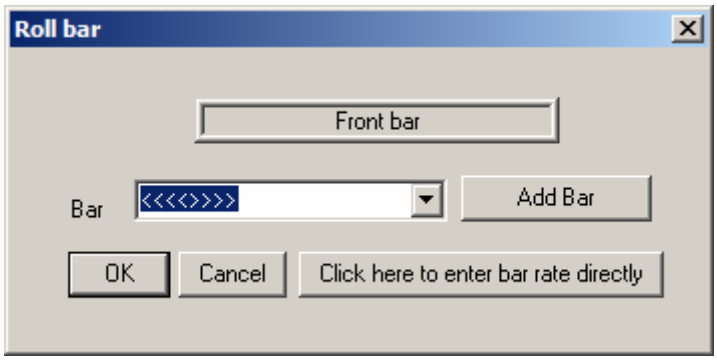
To add a spring simply click on the Add Spring to List button. This will display the following dialog,



In the Spring Title you may enter any spring title you wish. However in the value you must enter the rate as N/m. For those of you working in lbf/in the conversion is to simply multiply the value by 175.126. This spring will be added to the list.

Adding Roll bars

To add a roll bar simply click on the bar on the car graphic or the bar drop down box on the right hand side of the screen. This will display the following dialog,



To add a bar click on the Add Bar button. This will diplay a dialog identical to the add spring dialog. You simply enter your spring name and the rate as we discussed for the spring.

Adding Suspension Geometry.

To add suspension geometry options click on either the front and rear wishbone options. In lite mode this will display the following dialog,

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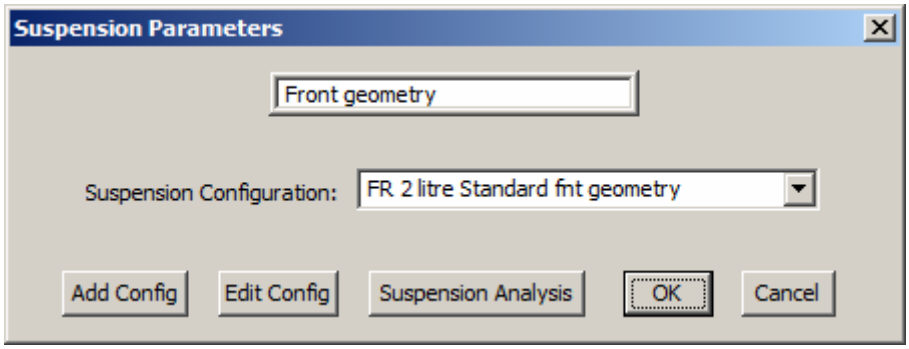
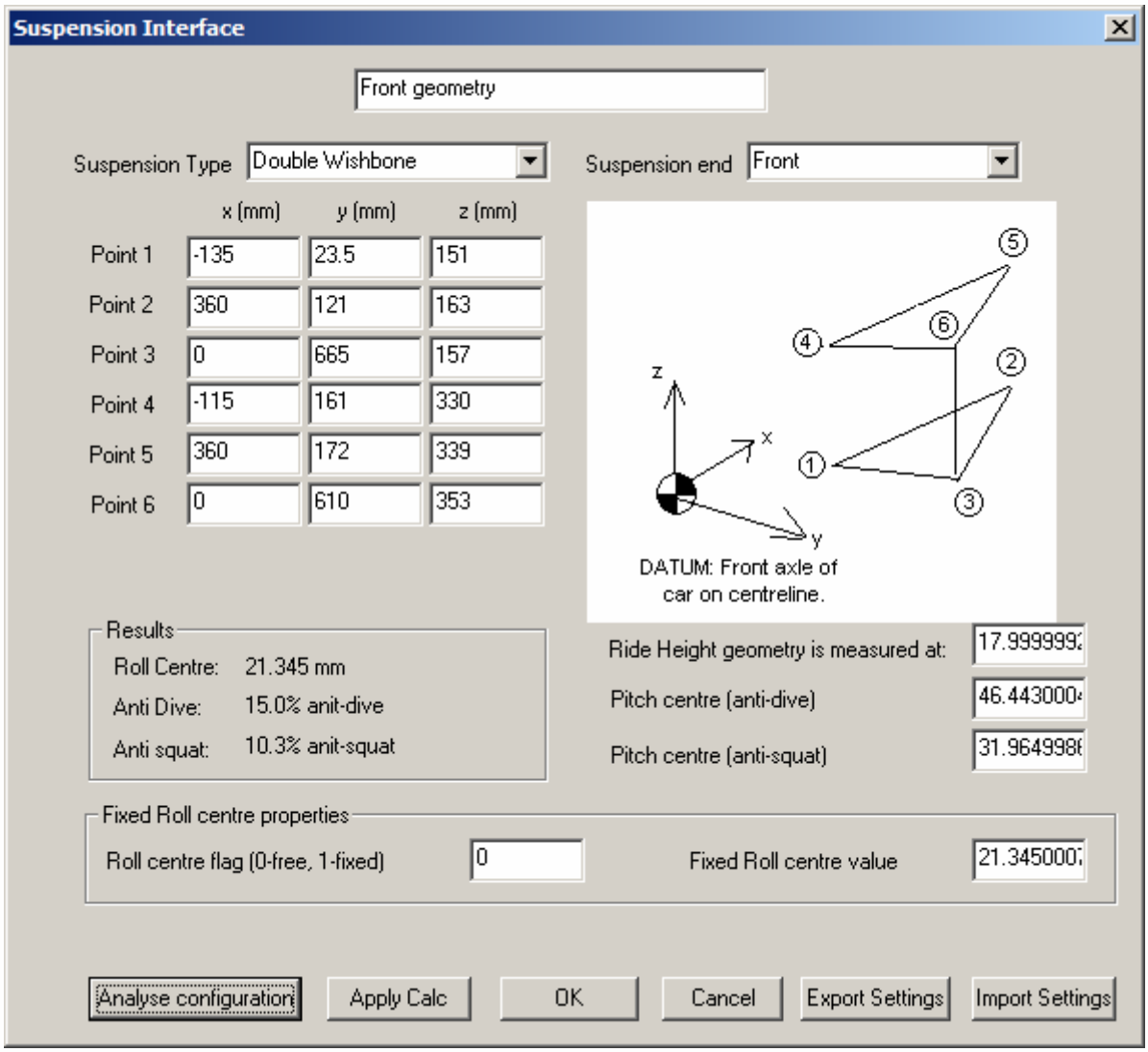


When we are adding suspension geometry options we are adding ChassisSim suspension Geometry files. To create these in lite mode simply click on Edit Config. This will display the following dialog,



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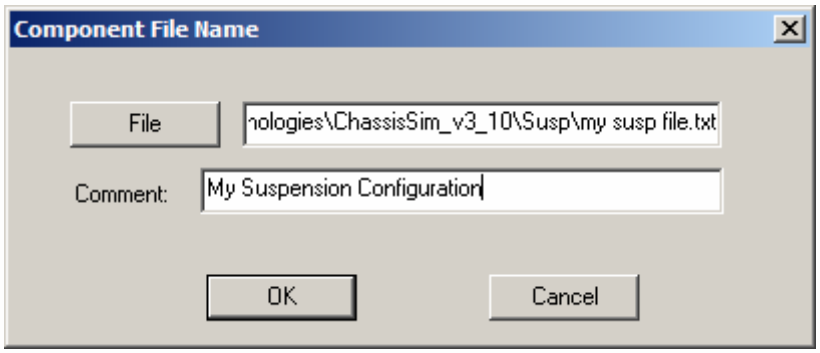
All you need to do is enter your suspension type and enter your configuration. When you are done press the Analyse Configuration tab. When this is done click on Export Settings. This will display the following dialog,



You can save this suspension file to any directory you wish.

To add this to the template press on Add Config. This will present you with a standard windows File save dialog. All you need to do is select the suspension file you just created and press OK. You are done.

Adding Wing configurations

Before we add wing configurations what we need to do is save the downforce, drag and aero balance maps to the the Aero directory in the ChassisSim executable. For example if you had ChassisSim v3.10 installed this directory would be C:\ChassisSim Technologies\ChassisSim_v3_10\Aero. The format for these are discussed in the online help. The only difference is the aero balance is expressed as a factor as opposed to a percentage. That is an aero balance of 38% is expressed as 0.38. For example formats look at the aeromaps in the Aero directory.

To add a wing click on either the front or rear wing. This will display the following dialog,

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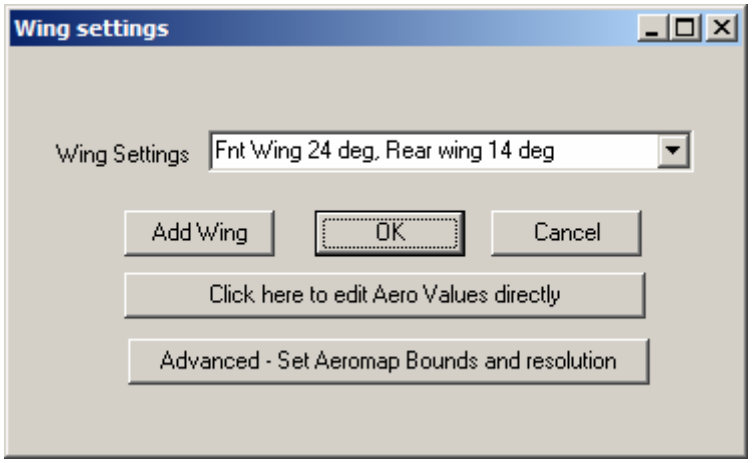
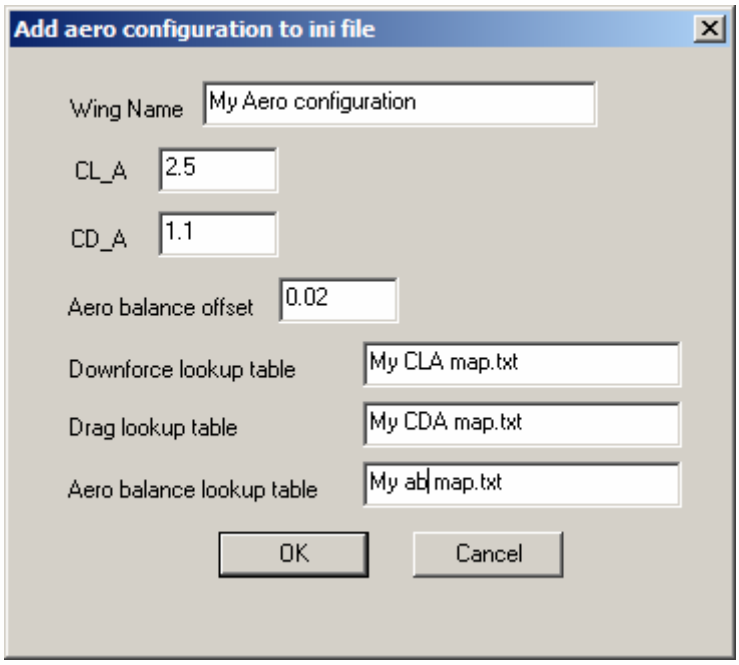


Click on the Add wing tab. This will display the following dialog,



You enter the wing configuration on the Wing Name. You then enter the max C_LA and C_DA and aero balance offset. The Downforce, Drag and Aero balance maps names are added just as filenames only. No Directory details are needed – ChassisSim will sort out the details. When you are done click on OK.

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When to use templates

As discussed previously Templates are a very useful tool for storing spring, bar, suspension geometry options and wing options. These are some rough rules of thumbs I use for using templates,

- When starting work on a setup I will load the template and then select File->Save As and save the car file as a particular option.
- When I need to work on this setup I will always load this particular car file.
- If I need to select suspension geometry, general wing options or bar options I'll have ChassisSim in lite mode.
- If I need more detailed setup information that's when I'll go into Standard mode if I need to.

In reality if you have ChassisSim Standard or above and you are using templates you will often by toggling between Standard and lite mode using View->Toggle between Lite and Standard dialogs. How often you do this is up to you and how you like to work.

Transferring templates to different versions of ChassisSim.

If you have upgraded to a newer version of ChassisSim in a different directory the procedure is very straightforward,

- Copy Car_my template.ini, def_my template.car and Car_Template.ini to the new ChassisSim directory.
- Copy any relevant Aero files into the Aero files of the new ChassisSim directory.

If you want to preserve the Car_Template.ini for any reason all you need to do is add the following to the end of the ini file,

[Car14]
Car name=Formula Renault 2L
Car file name=def_Formula Renault 2L.car
Car ini name=Car_Formula Renault 2L.ini
Car pict ind=0

And then add 1 to whatever the number of cars in this entry,

[Car properties]
Total No of cars=15

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Conclusion

ChassisSim templates are a very powerful way of organising race car data. Think of the template as having a virtual car in a virtual garage with all of the options you need to run the car. To generate a particular setup all you need to do is select the appropriate template, use File->Save As to save the specific setup. Then all you have to do is toggle to Lite mode using View->Toggle between lite and standard dialogs and you are good to go.

We have also seen that adding to the template is as simple as adding components using the tab controls. This will allow you to enhance the templates that already exist.

In summary the ChassisSim templates are a very powerful way of characterising the options you have available to you. In short all you need to do is select your options in lite mode, then if you need further refinement that's when you go into standard mode. Templates will be an invaluable aid as you consider your setup options for the racecar.

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