rFactor RealFeel and Force Feedback Setup Guide

Work in progress, not complete. 8/1/08
INTRODUCTION

It’s been such a long time...the North American GT Championship by RaceSims Revolution and The Pits

NAGT is for rFactor (http://www.rfactor.net) and is a simulated touring car championship based on the SCCA Speed World Challenge GT series.

This guide hopes to help users configure steering wheel force feedback for rFactor, and in turn NAGT. Nothing here is NAGT specific or will damage or ruin your rFactor install.

Volumes have been written over the past 3 years about the way rFactor handles force feedback out-of-the-box. Some people like it, but some don’t. Many racers coming from other sims are not happy with the transmission of forces through the wheel.

To compound this problem many or most of the user created mods released for rFactor have hopelessly broken suspensions, whether or not they are pretty to look at. As we believe we have reached a new age of modding in the engineering and calculation of vehicle dynamics, the transmission of believable forces to and through the wheel is now beyond a happy accident, it is a necessity to survive and thrive.

We want to make clear that RealFeel (or LeoFFB) is NOT REQUIRED, but if you know you are unhappy with rFactor’s feel by default, either plugin is highly recommended. Complaints without at least trying to help yourself will be cheerfully ignored :-(

We hope you find this guide useful.

THE PITS

IMPORTANT NOTES:

This Guide intends to cover 4 major areas:
1) Logitech steering wheel setup in Windows XP or Vista.
2) The RealFeel plugin.
3) The LeoFFB plugin.
4) Default rFactor force feedback controller settings.
“Degrees of Rotation” is personal preference, from between 360° to 900°.
“Combined Axis” is an historic compatibility and not necessary for any modern sim (rFactor, GTR2, RACE, LFS, Netkar Pro, iRacing, etc.). Make sure it is UNCHECKED.
“Overall Effects Strength” is set slightly over 100% on purpose. Musicians and audiophiles will be familiar with the concept of clipping or compressing/limiting. The last 5% of extreme forces from hitting walls are unnecessary, and this amplifies the subtle forces way down in amplitude for better feel. Do not set this lower, if the wheel in game is too strong see next page for rFactor FFB Strength.
“Enable Centering Spring” is also an historic compatibility and not necessary for any modern sim. The return of the wheel to center is calculated in any modern sim from forces on the front wheels. Using ANY centering spring dulls the force feedback calculated from the physics engine by providing an unrealistic constant pull. You will not feel the subtle lightening of the wheel. DO NOT USE.
“Force Feedback Type” is self explanatory.

“Force Feedback Effects” is usually referred to “canned vs. natural”. Meaning forces that are generated from the physics of the car and tires vs. wheel shaking effects of an arcade game.

- Low – only naturally calculated forces from the car and tires.
- Medium – introduces artificial shaking of the steering wheel when triggered by certain events.
- High – even more artificial than Medium.

Set to “Low”. Modern tracks model curbs and pavement irregularities correctly, so when you pound a curb it jerks the front tire/wheel, that energy travels across the tie rods and up the steering rack, and into the steering wheel.

“Force Feedback Strength” is where you set how hard you want your steering wheel to push/pull. NOT in the Logitech “Overall Effects Strength”, but here. Set this to taste. ADJUST HOW HARD YOU WANT THE WHEEL TO WORK AGAINST YOU HERE.

Please note that the value is NEGATIVE. This is a quirk of Logitech wheels, it must be negative or the wheel will pull the wrong way.
The RealFeel Force Feedback Plugin for rFactor can be downloaded here: http://www.rfactorcentral.com/detail.cfm?ID=Real%20Feel%20FFB%20Plugin

This little utility by TechAde and Kangaloosh has been a revolution, it replaces the “interpretive” stock feedback in rFactor with the forces actually generated from the steering rack, that then travel up the steering column and through the steering wheel. The catch is the mod must be designed with a realistic car geometry, which is unfortunately still not standard.

More coming.
RealFeel

An example RealFeel.ini file is included in your rFactor root directory. It is named NAGTrealfeel.ini so as to not overwrite any existing files. Rename or copy/paste as you see fit. The values to the right are good starting points if you have followed the guide so far.

An interesting aside is that all cars were created to have approximately the same strength of forces at the steering rack. The “NAGT” stanza is for leagues who require all cars to be the same class for scoring purposes. When using the NAGT classification all cars share this RealFeel setting, and drivers will not need to drastically change settings when switching from car to car!

[General]
RealFeelIsOn=True
ConsoleEnabled=False
ConsoleRepeatDelay=0.10000
SpeechEnabled=True
KeyRepeatDelay=0.10000
SteerForceInputMax=11500.0000
MinSpeed=10.0000
LogEnabled=False
DefaultMaxForceAtSteeringRack=3500.0000
DefaultSteeringDamper=9500.0000
DefaultSmoothingLevel=0

[996]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[C6]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[CTS-V]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[DBRS9]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[GTO]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[S60-R]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[Viper-CC]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

[NAGT]
MaxForceAtSteeringRack=3500.000000
SteeringDamper=9500.000000
FFBMixerRealFeelPercent=100.000000
SmoothingLevel=0

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An alternative solution is the LeoFFB plugin, found here: http://www.rfactorcentral.com/detail.cfm?ID=Leo%27s%20FFB%20plugin

The big difference (simplistic explanation) is that this calculates the forces at the contact patch of the tire, not the mechanical forces through the steering rack.

It’s a bit of 6-of-one, half-a-dozen of another, some people feel strongly about what is correct but for most purposes it’s close enough to the same thing.

Suggested car dimension settings below. More later.

14.0 Front wheel lock angle, degrees, as set in Garage
0.72 Front wheel distance to centerline (half front wheel track)
1.3 Front axle distance to reference point (half wheel base)
2.5 Relative strength of FFB effects
6.0 Aligning moment curve shape / feeling of tyre losing grip
0.99 Negative aligning moment parameter for high slip angles
12.5 Slip angle where aligning moment reverses direction
0.1 Caster (dimensionless)
0.0 Camber ratio (not degrees!)
1.0 Road bumps feeling on the wheel
11500.0 maximum FFB force for stationary and low speed effects
8.0 stiffness of stationary wheels
4.0 wheel rubber hardness (1..5)
6.0 how quickly static forces drop off when rolling
More later.

**DEFAULT RFACCTOR FFB**

For those that don’t wish to try any of the much improved plugins developed for rFactor, some suggestions for the stock force feedback will be made here.

```
[GENERAL CONTROLS]
Gear Select Button Hold="0" // For sequential
Steering Wheel Range="600" // In cockpit steering wheel

[FORCE FEEDBACK]
FFB Ignore Controllers="6" // Ignore anything not ctrl 1
FFB steer force neutral range="0.00000" // No slop
FFB steer force grip function="0.61000"
FFB steer force grip weight="0.76000"
FFB steer force grip factor="0.68000"
FFB rumble strip pull factor="-0.90000"
```