

## Grand Prix Legends – Hints and Tips to improve Lap Times

After many years of playing GPL there is still a lot to learn about getting the most out of this wonderful simulation. There is no silver bullet for success, rather there lots of small improvements to be made in numerous areas which when combined can yield significant improvements in lap times and race results.

### Steering Wheel and Pedals

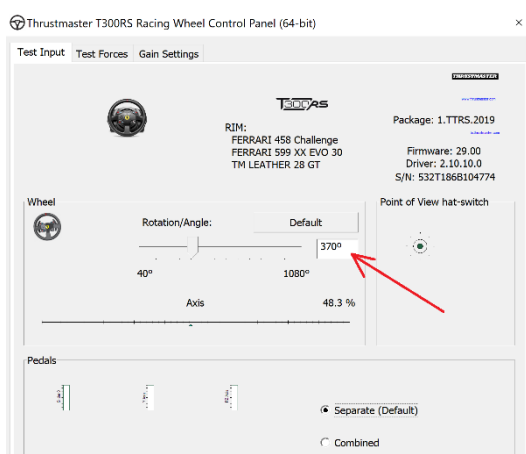
A good quality steering wheel, pedals and H-shifter (if used) helps, but there is no need to spend a huge amount of money on top of the range products. However, if the budget allows (because even these are not cheap) it is worth investing in a combination with the following features:

- Accurate belt driven force feedback (e.g. [T300](#)).
- Hall Effect sensors in the shifter - less chance of dirty contacts (e.g. [TH8A](#)).
- A load cell on the brake pedal (e.g. [T-LCM](#) or [Load Cell Mod](#))

The most important feature is the load cell. This ensures the braking is proportional to pedal force not pedal position which is far more intuitive and easier for “muscle memory”. It is also more realistic and representative of braking in a real car. Consistent heavy braking is easier with a load cell. Trail braking is also easier as is slightly reducing braking force on locked wheels which allows them to regain their grip.

The force feedback for any wheel can be improved by adopting the [Force Feedback patch](#). This patch eliminates the non-physics (i.e. centering and damping etc) forces and reduces the latency so that the feedback from the road wheels is easier to feel. Using this patch makes it much easier to feel when the front tyres are starting to lose grip. It doesn't help with the rear tyres, that's where tyre temperatures come in.

Most steering wheels have a degree of rotation that is far too much for GPL. I set mine to 370° which keeps the controller and in-game wheels rotating at the same rate.



Both wheels  
at 90°

I set the steering ratio in the GPL car setup menu to 8,9 or 10:1 depending on how tight the sharpest corner on the track is.

## **Tyre Pressures and Tyre Temperatures**

In the various guides provided by experienced GPL drivers, lot of emphasis is placed on the importance of tyre temperatures. However, this is a little misleading. The factors that affect grip are tyre pressure and tyre contact patch temperature, not tyre carcass temperature.

The GPL physics engine is designed to yield maximum grip at specific tyre pressures (see this [SRMZ thread](#)). This may or may not be totally representative of real-world tyres but it is irrelevant, this is how the game works. So, to optimise grip the tyres should be at the optimum pressures when HOT. This means doing a few laps in qually and returning to the pits to check on the tyre pressures. The number of laps will vary depending on the circuit but essentially the tyre temperatures should have warmed up and be stable.

Note: increasing tyre pressures in order to generate the “correct” tyre carcass temperature can result in a situation where the tyre temperatures go from cold low grip (“blue” in pribluda) to overheated low grip (“red” in pribluda) without passing through the hot optimum grip (“green” in pribluda) state.

Optimum Tyre pressures:

Car Set	Front (PSI)	Rear (PSI)
1955 GP	40	40
1965 F1	24	26
1966 F1	26	26
1966 CanAm	26	26
1967 F1	24	26
1967 F2	26	26
1967 Sports Cars	32	32
1967 Sports Cars (Porsche 910 and Alpha Romeo)	28	28
1968 F1 (Early)	26	26
1968 F1 (Late)	26	26
1969 F1 (Extra)	24	26
1971 CanAm	24	24

The use of [Pribluda](#) is essential when checking the correct tyre temperatures. The tyre pressures in the GPL setup menu are carcass temperatures, as are the standard tyre pressures in Pribluda. To display the contact patch temperatures, the option “showPatch” under the “[tyres]” section in the pribluda.ini file should be set to “1”. The patch temperatures are identified by the letters “PT”.

Grip is proportional to contact patch temperature which becomes very obvious when experimenting with Pribluda. Power sliding the car will generate a lot of heat in the rear tyres and it is quite easy to turn the contact patches “red” with the obvious lack of grip without the tyre carcass temperature changing very much. Equally the temperature drops very quickly and the grip returns when the throttle is reduced. So, during the race it is important to monitor tyre contact temperature and to practically ignore tyre carcass temperature.

There is a bug in the original gpl.exe code where 26 psi is always used instead of the tyre's optimum pressure. This bug has been fixed in most of the mods but for the 67F1 cars and the early mods the bug fix patch that can be downloaded from [Lee Bowden's site](#).

## **Field of View**

The default Field of View (FOV) in GPL is 78°. This was fine when the game was first released in 1998 when 14" CRT monitors were the norm. However, modern wide screen displays now allow the use of a more realistic field of view. Why does this matter? There is a good explanation [here](#).

FOV affects depth perception. A narrow FOV flattens depth perception so objects appear closer. But a narrow FOV makes it easier to see elevation changes. There is considerable debate on what is a realistic FOV, but I find a FOV of 60° is reasonable.

I know Oulton Park and the Isle of Man very well, so I know what looks right. I think the 60° FOV gives more realistic impression of the gradient, not perfect, Deer Leap still looks a bit flat compared with the photo. I may experiment with a smaller angle in future but for now 60° FOV is what I use.

For circuits that I have never visited in person I cannot say what the elevation should look like, but the bumps in the track are easier to see. The apexes are also easier to see and judge which results in more consistent and faster lap times.

## Oulton Park

FOV 78°



FOV 60°



Actual Photo





# Isle of Man

FOV 78°



FOV 60°



The nasty bump at Interlagos harder to see in 78° FOV:

Interlagos

FOV 78°



FOV 60°





It is easy to get too close to the car in front using 78° FOV. The cars look further away than they are.

## Silverstone

FOV 78°- 10 yards separation



FOV 60°- 10 yards separation



## Silverstone

FOV 78°- 5 yards separation



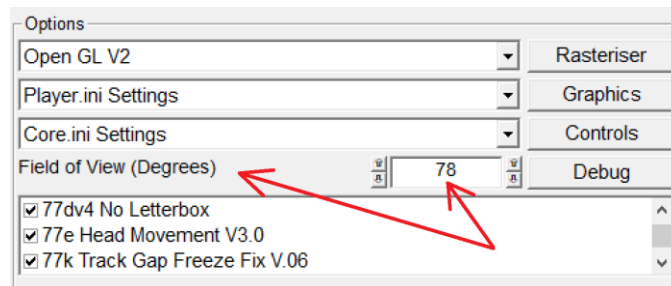
FOV 60°- 5 yards separation



At a 60° FOV the cars look closer, so the following driver is more likely to remain at a safer distance.



The FOV can be set to 60° in GEM+

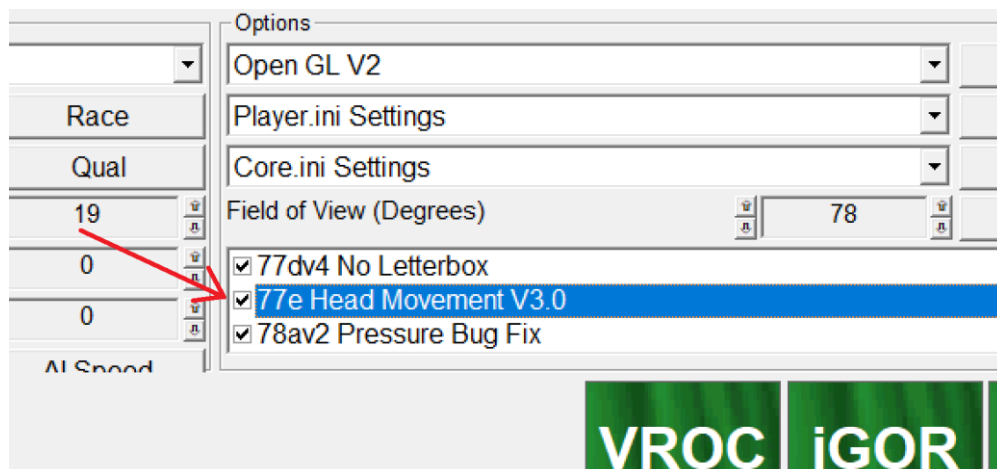


but this results in the mirrors not being visible. This can be corrected by moving the position of the driver.

There are 2 ways to adjust the driver's position:

1. Use [GPL Shift](#) – this utility is for H-Shifters but it also allows the position of the driver to be moved:
  - a. Forwards and backwards using (left) CTRL key and the up and down arrow keys.
  - b. Up and down using (left) Shift key and the up and down arrow keys.
2. Use GPL Head Movement Patch - this utility can be downloaded from Lee Bowden's GPL [Motorworks site](#). It allows the user to set the FOV **and** driver's position independently for every car in every mod.

I use the Head Movement Patch and select it in GEM+



Having set the FOV the next question is how close should you view the screen? There is a mathematical equation that determines the optimum viewing distance for a given screen size and FOV. Some people measure the screen size and viewing distance and calculate the FOV. This is not the right approach in my opinion. The user should decide on the desired FOV and set the viewing distance accordingly. This does mean that for some combinations of FOV and screen size the viewing distance will be impractical. So a compromise is often necessary.

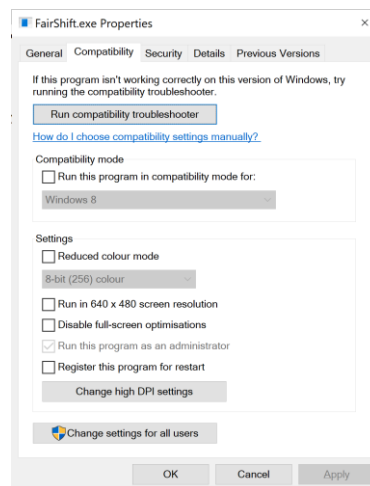
A useful Excel spreadsheet for calculating FOV is [here](#).

## FairShift

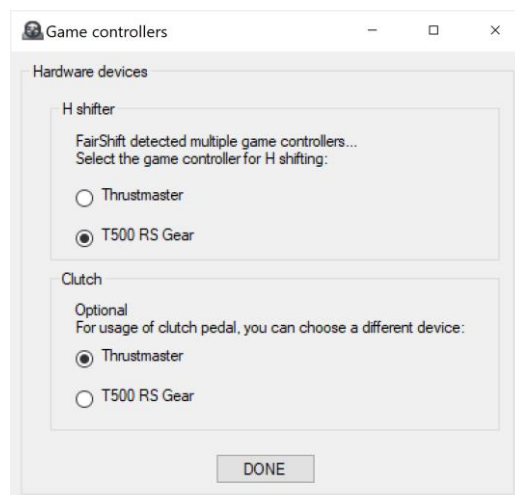
Using the H-Shifter with a clutch is difficult and there isn't any practical advantage. However, this is not the case if the H-Shifter is used **without** the clutch. In the original unmodified game, the gear shift times were programmed to be 0.222 milliseconds. When the H-Shifter is used without the clutch (the use of the clutch is optional in GPL Shift), it is possible to shift in less time. Which is obviously an unfair advantage. In order to mitigate the unfair advantage, a utility called [FairShift](#) has been created which restores the original shift times. So drivers can use a H-Shifter without the clutch in conjunction with FairShift without gaining an unfair advantage.

The following screenshots show how FairShift v2.1 is setup to be used with the Thrustmaster T300 Steering Wheel and the Thrustmaster TH8A Shifter.

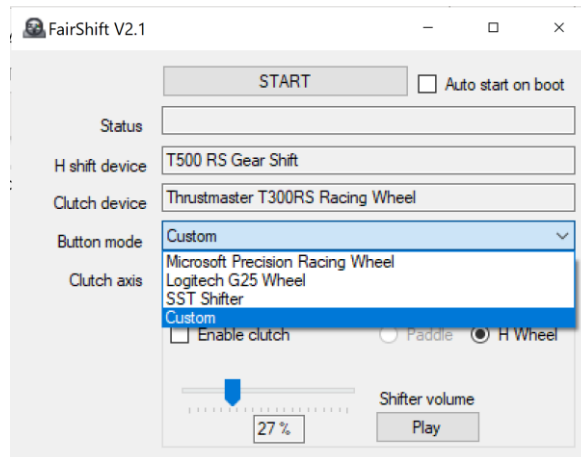
In Windows 10, the FairShift utility needs to be run under administration privileges. To set this go to the properties for the FairShift.exe file (use RH mouse button on the file and select "Properties" from the drop down list) and select "Run this program as an administrator". Then select "Change settings for all users".



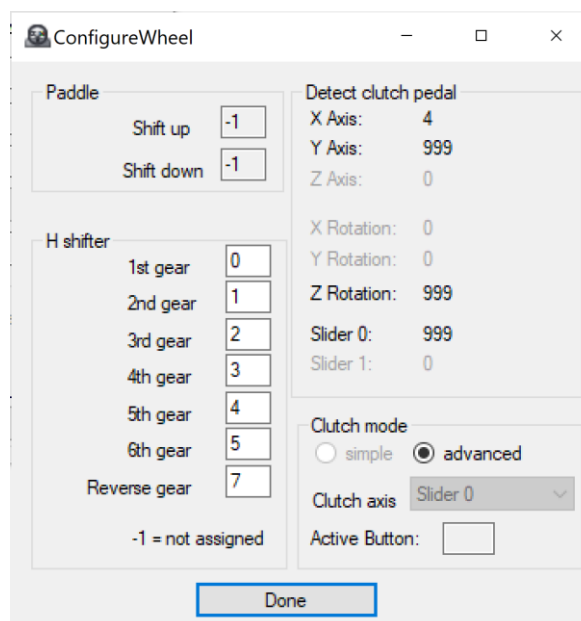
When starting FairShift the following window pops up. With the controller setup used in this example, the H-Shifter appears as "T500 RS Gear" and the clutch pedal is attached to the steering wheel and hence appears as "Thrustmaster".



Select “DONE” and a second window appears. When the utility is run for the first time, the gear selector positions need to be set. Because the Thrustmaster T300 Steering Wheel and the Thrustmaster TH8A Shifter are not pre-programmed selectable options, the gear selector and clutch needs to be set using the “Custom” option.



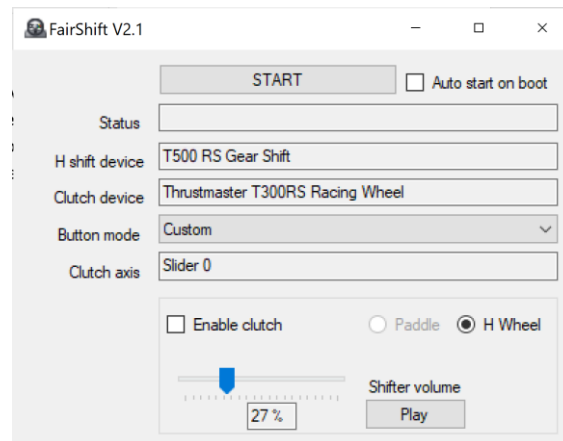
The following “Configure Wheel” window should appear.



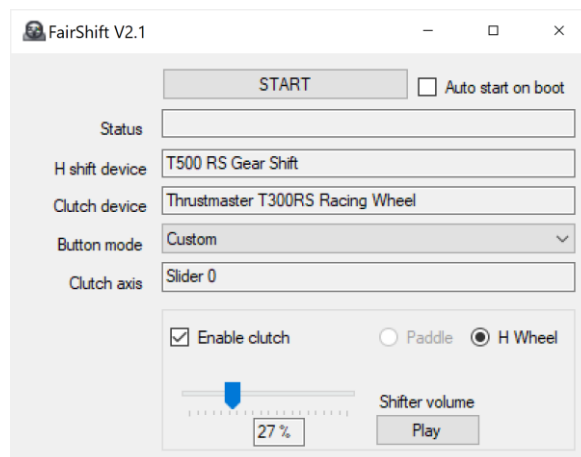
Put the H-Shifter in each gear and make a note of the “Active Button”. The value of the “Active Button” needs to be manually entered into the H-Shifter gear field. If the clutch is to be used, press the clutch pedal and make a note of which axis or slider moves in the “Detect Clutch Pedal” box. Then use the drop-down list in the “Clutch Mode” Box to select the clutch axis. Select DONE to go back to the main window. There is a tick box on the main window to enable the clutch as required. The clutch will still work from a standing start regardless of whether the box is ticked or not.



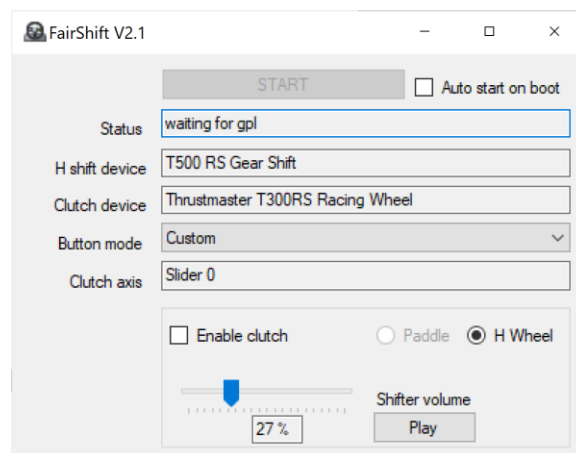
Clutch disabled:



Clutch enabled:



FairShift must be running before GPL is started. Press the start button and FairShift will listen for a GPL executable.



The options only have to be set once, but FairShift needs to be restarted before each GPL session.

## **Pribluda Layout**

There is a lot of information available using Pribluda. Some bits are more useful than others so it is worth arranging the screen so that the most useful information can be seen easily. It is preferable not to have to take one's eye off the racing line for too long. Searching for the information you want is not a good idea.

Before you start it is worth installing the GPL No Letterbox Patch. This utility can be downloaded from Lee Bowden's GPL [Motorworks site](#). It removes the black bars at the top and bottom of the screen.

The important information should be in the middle, so you only have to move your eyes up and down to see all the information you need. This information is:

1. Driver position relative to the other cars (best set to distance not time).
2. Tyre contact patch temperature.
3. Frame rate.

In this screenshot, the least useful information is crossed out in red. The most useful information is highlighted in the yellow boxes:



The other information is available if it is needed. For example, fuel tank contents are on the right but unless you have made a mistake in your fuel calculations or you are in a "Pit Stop" race, you should not need to monitor your fuel level whilst racing.

## **Setups**

This must be the most debated topic when trying to improve lap times, however it is the most misleading because setups are very personal. They depend on the game settings and controller setup. A setup that works for someone who drives with a keyboard is unlikely to work for someone with a steering wheel. Swapping controllers can mean a driver has to develop completely new setups.

Having changed my game settings (FOV etc) and Controller (wheel and H-Shifter), I've gone back to the default setups. I only make changes when I can understand why.

On bumpy tracks it is important for the suspension not to bottom-out and cause the chassis to scrape along the ground. So, increasing the ride height and the bump rubbers helps to avoid this issue.

Most of the default setups are pretty good. The only mod that is problematic is the 68 mod. The default brake bias settings are too heavily biased to the rear (hence the car tends to "swap ends" under heavy braking). Increasing the front brake bias to about 58% makes the setups much easier to drive.

## **Before changing a Setup**

A setup will change the way the car behaves but before any changes are made to try to improve a particular aspect, it is a good idea to ensure the setup is working optimally. The following factors should be considered before any changes are made so that any differences are down to the setup changes and not something else.

The Steering Ratio is heavily dependent on the Steering Wheel and I almost always have mine set to 9:1. The only time I would change the ratio is if I am at a track with a very tight hairpin turn (such as Monaco or Dundrod).

The tyre pressures should be as defined in the tyre pressures table above.

The tyres should be up to temperature.

Comparing one setup with cold tyres against another with hot tyres doesn't make sense.

## **Setup Development**

I'm not going to cover setup development here, there are a plethora of websites offering advice on setups. However, a good place to start would be this [UKGPL Thread](#) or [Steve Smiths Setup Guide](#).

## **Driving Technique**

The closer my controller configuration is to a real car, the more the advice from real F1 racers makes sense. Someone who plays GPL with a keyboard or X-Box controller may develop a technique that is fast but not necessarily realistic. So, hints and tips from racing schools (e.g. [driver 61](#)) make a lot more sense when using a steering wheel and H-Shifter.

The key to a fast lap time is high exit speed from a corner. This means getting the power down early. Some drivers seem to charge into a corner sideways in order to straighten out the corner and get the power down early. I can't master that technique. I prefer a controlled entry and I try to get the power down early by gently applying the throttle and using the power to rotate the car through the



turn rather than use the steering wheel to direct the car. In the past I've struggled to achieve this and I've resorted to playing with the setup (diff angles, dampers, spring rates etc) because that is what all the setup guides say. But now I've got the tyre pressures right and the 60° FOV makes the rotation more noticeable visually, I've started to be able to control the power delivery better which means I can 4 wheel drift out of corners using the throttle to rotate the car and the steering wheel to control the drift much more successfully than I have ever done before. The setup changes I was making were making the situation worse not better. The secret is to get just the right amount of rotation on corner entry such that the application of the throttle past the apex is just enough to rotate the car around the rest of the corner with the minimum of steering wheel input.

The contact patch temperatures in Pribluda help me to learn how much throttle I can apply. The force feedback and rotation provide the cues to enable me to control the throttle, but if I make a mistake the tyre patch temperatures usually confirm what went wrong.

Heavy braking is much easier with a load cell. My braking technique has not really changed but I find I can trail brake much easier. Recovering from a lock-up by releasing the pedal and reapplying pressure is also easier with the load cell.

Phil Thornton - March 2023